

EMBRYOLOGY IN THE QUR'AN: Much Ado About Nothing

A Refutation of Hamza Tzortzis' *Embryology in
the Qur'an: A Scientific-Linguistic Analysis of
Chapter 23*



Ahh Human Development,
a single sperm cell
fertilizes an ovum to form
a new diploid cell which
then undergoes cell
division multiple times and
then with cell signaling
undergoes cell differen-
tiation to form special-
ized cells to form tissues
and develop organs and
organ systems

In my infinite wisdom, the best
summary of this process is -
First there is semen, then it is
a blood clot, then it is a piece
of meat, then it is bones, then
it is wrapped in flesh, then it is
a baby!

CaptainDisguise & Martin Taverille

The purpose of *Embryology in the Qur'an: Much Ado About Nothing* is to analyze the claims and arguments found in a booklet titled *Embryology in the Qur'an: A Scientific-Linguistic Analysis of Chapter 23* Version 2.1b authored by Hamza Andreas Tzortzis, Senior Researcher and Lecturer at the Islamic Education and Research Academy. Many other Muslim apologists and websites make similar claims and arguments and thus much of this analysis will have wider applicability. The content of this paper has been researched and developed with much diligence and integrity. Any errors on the part of the author's research will be duly noted and immediately rectified.

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References

Resources

1. www.embryologyinthequran.blogspot.com
2. Download all the versions of Hamza Tzortzis' paper
 - Version 1: <http://www.mediafire.com/?fwztng01f7ovvve>
 - Version 1.1: <http://www.mediafire.com/?k8pfheuu3leulp8>
 - Version 2: <http://www.mediafire.com/?gg18h25g8gd3okf>
 - Version 2.1b: <http://www.mediafire.com/?4coul56y3n4wgf6>
3. Searchable Qur'an Online
 - (Arabic, English Transliteration and Translation): www.quran.com
 - Word by Word meaning of Qur'an: <http://corpus.quran.com/>
4. Searchable Hadith online
 - (English + Arabic. Limited collection): www.sunnah.com
 - (Arabic. Entire Collection): <http://hadith.al-islam.com>
5. Exegesis on the Qur'an
 - Tafsir ibn Kathir: <http://www.qtafsir.com/>
 - Various Tafsirs (Arabic + English): <http://www.altafsir.com/>
6. Dictionaries
 - Lisan al-Arab: <http://www.baheth.info/>
 - Lane's Arabic-English Lexicon: <http://www.tyndalearchive.com/tabs/lane/>
 - Hans Wehr Modern Dictionary: <http://www.mediafire.com/?d7x2x5fu909idao>

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The Entire Corpus of Islamic Embryology

The purpose of this section is to list every individual Quranic verse as well as Hadith narration that pertains to the topic of Embryology. This section also included any Islamic scriptural sources that contain any information that may provide an insight into the state of knowledge of ancient Arabia, where the Islamic prophet Muhammad lived.

i. Qur'an

The English translations used here are provided by *Sahih International* first published in the year 1997. The translations may or may not provide an accurate understanding of the original Arabic as they often contain modern re-interpretations of the individual translator.

For example, the word translated as “sperm” below, when analyzed under the light of classical lexicons, was originally meant to refer to a “small amount of semen” (refer to section on “*Nutfah*” for more information on the accurate translation, page 14). Likewise, the word translated as “clinging clot” refers to a “clot of blood” (refer to section on “*Alaqah*” for more information on the accurate translation, page 51).

Note: Most of the verses are mere repetitions of ideas given in **Sura 23:13-14**. The only other verses that offer any different information are **Sura 86:6-7**.

1. Sura 16:4

He created man from **a sperm-drop**; then at once, he is a clear adversary.
<http://quran.com/16/4>

2. Sura 18:37

His companion said to him while he was conversing with him, "Have you disbelieved in He who created you from dust and then from **a sperm-drop** and then proportioned you [as] a man?
<http://quran.com/18/37>

3. Sura 22:5

O People, if you should be in doubt about the Resurrection, then [consider that] indeed, We created you from dust, then from **a sperm-drop**, then from **a clinging clot**, and then from **a lump of flesh**, formed and unformed - that We may show you. And We settle in the wombs whom We will for a specified term, then We bring you out as a child
<http://quran.com/22/5>

4. Sura 23:13 - 14

Then We placed him as **a sperm-drop** in **a firm lodging**. Then We made the sperm-drop into **a clinging clot**, and We made the clot into **a lump [of flesh]**, and We made [from] the lump, **bones**, and We **covered the bones with flesh**; then We developed him into another creation. So blessed is Allah , the best of creators.

<http://quran.com/23/12-14>

5. Sura 32:8

Then He made his posterity out of the extract of **a liquid disdained**.

<http://quran.com/32/7-8>

6. Sura 35:11

And Allah created you from dust, then from **a sperm-drop**

<http://quran.com/35/11>

7. Sura 36:77

Does man not consider that We created him from a [mere] **sperm-drop**, then at once he is a clear adversary?

<http://quran.com/36/77>

8. Sura 40:67

It is He who created you from dust, then from **a sperm-drop**, then from **a clinging clot**; then He brings you out as a child

<http://quran.com/40/67>

9. Sura 53:45-46

And that He creates the two mates - the male and female from **a sperm-drop** when it is emitted

<http://quran.com/53/45-46>

10. Sura 75:36-40

Does man think that he will be left neglected? Had he not been **a sperm from semen** emitted? Then he was **a clinging clot**, and [Allah] created [his form] and proportioned [him] And made of him two mates, the male and the female. Is not that [Creator] Able to give life to the dead?

<http://quran.com/75/36-40>

11. Sura 76:2

Indeed, We created man from **a sperm-drop mixture** that We may try him; and We made him hearing and seeing.

<http://quran.com/76/2>

12. Sura 77:20

Did We not create you from **a liquid** disdained?

<http://quran.com/77/20>

13. Sura 86:6-7

He was created from **a fluid**, ejected; **emerging from between the backbone and the ribs.**

<http://quran.com/86/6-7>

14. Sura 96:1-2

Recite in the name of your Lord who created; created man from **a clinging substance.**

<http://quran.com/96/1-2>

ii. Hadith

The Hadith collections are believed to contain the narrations from the Islamic prophet Muhammad. There are various collections of hadith. The hadith provided in this section are acquired from the collections of Sahih Bukhari, Sahih Muslim, Sunan abu Dawud, Jami' al-Tirmidhi, Musnad Ahmed, Imam Malik's al-Muwatta, Nawawi's 40 Hadith and Riyad as-Saliheen. Of these collections, Sahih Bukhari and Sahih Muslim are considered the most authentic by Muslims.

The English translations are acquired from <http://www.sunnah.com/>. They may or may not reflect an accurate understanding of the original Arabic.

1. Imam Nawawi's 40 Hadith. Hadith 4

On the authority of Abdullah ibn Masood (may Allah be pleased with him), who said: The Messenger of Allah (peace and blessings of Allah be upon him), and he is the truthful, the believed, narrated to us, **“Verily the creation of each one of you is brought together in his mother’s womb for forty days in the form of a nutfah**, then he becomes an alaqah (clot of blood) for a like period, then a mudghah (morsel of flesh) for a like period, then there is sent to him the angel who blows his soul into him and who is commanded with four matters: to write down his rizq (sustenance), his life span, his actions, and whether he will be happy or unhappy (i.e., whether or not he will enter Paradise). By the One, other

than Whom there is no deity, verily one of you performs the actions of the people of Paradise until there is but an arms length between him and it, and that which has been written overtakes him, and so he acts with the actions of the people of the Hellfire and thus enters it; and verily one of you performs the actions of the people of the Hellfire, until there is but an arms length between him and it, and that which has been written overtakes him and so he acts with the actions of the people of Paradise and thus he enters it.” It was narrated by al-Bukhari and Muslim.

<http://sunnah.com/nawawi40/4>

Repeated in:

Sahih Bukhari, <http://sunnah.com/bukhari/59/19>

Sahih Bukhari, Vol. 8, Book 77, Hadith 593 <http://sunnah.com/urn/62020>

Riyad as-Saliheen. Book 1, Hadith 396 <http://sunnah.com/riyadussaliheen/1/396>

Sahih al-Muslim. Book 33, Hadith 6390 <http://sunnah.com/urn/263900>

2. Sahih Bukhari, Book 55, number 545

Narrated Abu Salama: Um Salama said, "Um Sulaim said, 'O Allah's Apostle! Allah does not refrain from saying the truth! Is it obligatory for a woman to take a bath after she gets nocturnal discharge?' He said, 'Yes, if she notices the water (i.e. discharge).' Um Salama smiled and said, 'Does a woman get discharge?' Allah's Apostle said. **'Then why does a child resemble (its mother)?'**

<http://sunnah.com/bukhari/60/3>

3. Sahih Bukhari Vol. 4, Book 55, Hadith 546

As for the resemblance of the child to its parents: **If a man has sexual intercourse with his wife and gets discharge first, the child will resemble the father, and if the woman gets discharge first, the child will resemble her.**" On that `Abdullah bin Salam said, "I testify that you are the Apostle of Allah." `Abdullah bin Salam further said, "O Allah's Apostle! The Jews are liars, and if they should come to know about my conversion to Islam before you ask them (about me), they would tell a lie about me."

<http://sunnah.com/bukhari/60/4>

4. Sahih Bukhari Vol. 4, Book 55, Hadith 550

The Prophet said, "Allah has appointed an angel in the womb, and the angel says, 'O Lord! A drop of discharge (i.e. of semen), O Lord! a clot, O Lord! a piece of flesh.' And then, if Allah wishes to complete the child's creation, the angel will say. 'O Lord! A male or a female? O Lord! wretched or blessed (in religion)? What will his livelihood be? What will his age be?' The angel writes all this while the child is in the womb of its mother."

<http://sunnah.com/bukhari/60/8>

5. Sahih Muslim Book 3, Hadith 608

Anas b. Malik reported that Umm Sulaim narrated it that she asked the Apostle of Allah (may peace be upon him) about a woman who sees in a dream what a man sees (sexual dream). The Messenger of Allah (may peace be upon him) said: In case a woman sees that, she must take a bath. Umm Sulaim said: I was bashful on account of that and said: Does it happen? Upon this the Apostle of Allah (may peace be upon him) said: Yes, otherwise how can (a child) resemble her? **Man's discharge is thick and white and the discharge of woman is thin and yellow;** so the resemblance comes from the one whose genes prevail or dominate.
<http://sunnah.com/muslim/4/32>

6. Sahih Muslim Book 3, Hadith 614

He (the Jew) said: I would lend ears to that. He then said: I have come to ask you about the child. He (the Holy Prophet) said: **The reproductive substance of man is white and that of woman yellow, and when they have sexual intercourse and the male's substance prevails upon the female's substance, it is the male child that is created by Allah's Decree, and when the substance of the female prevails upon the substance contributed by the male, a female child is formed by the Decree of Allah.**
<http://sunnah.com/muslim/4/38>

7. Sahih Muslim Book 17, Hadith 3627

Abu Sa'id al-Khudri reported that Allah's Messenger (may peace be upon him) was asked about 'azl, whereupon he said: **The child does not come from all the liquid** (semen) and when Allah intends to create anything nothing can prevent it (from coming into existence).
<http://sunnah.com/urn/233810>

8. Sahih Muslim Book 33, Hadith 6392

Hudhaifa b. Usaid reported directly from Allah's Messenger that he said: When **the drop of (semen) remains in the womb for forty or fifty (days) or forty nights**, the angel comes and says: My Lord, will he be good or evil? And both these things would be written. Then the angel says: My Lord, would he be male or female? And both these things are written. And his deeds and actions, his death, his livelihood; these are also recorded. Then his document of destiny is rolled and there is no addition to nor subtraction from it.
<http://sunnah.com/urn/263920>

9. Sahih Muslim Book 33, Hadith 6393

Evil one is he who is evil in the womb of his mother and the good one is he who takes a lesson from the (fate of) others. The narrator came to a person from

amongst the Companions of Allah's Messenger (may peace be upon him) who was called Hudhaifa b. Usaid Ghifari and said: How can a person be an evil one without (committing an evil) deed? Thereupon the person said to him: You are surprised at this, whereas I have heard Allah's Messenger (may peace be upon him) as saying: **When forty nights pass after the semen gets into the womb, Allah sends the angel and gives him shape. Then he creates his sense of hearing, sense of sight, his skin, his flesh, his bones, and then says: My Lord, would he be male or female?** And your Lord decides as He desires and the angel then puts down that also and then says: My Lord, what about his age? And your Lord decides as He likes it and the angel puts it down. Then he says: My Lord, what about his livelihood? And then the Lord decides as He likes and the angel writes it down, and then the angel gets out with his scroll of destiny in his hand and nothing is added to it and nothing is subtracted from it.

<http://sunnah.com/urn/263930>

10. Sahih Muslim Book 33, Hadith 6395

I visited Abu Sariha Hudhaifa b. Usaid al-Ghifari who said: I listened with these two ears of mine Allah's Messenger (may peace be upon him) as saying: **The semen stays in the womb for forty nights**, then the angel, gives it a shape. Zubair said: I think that he said: One who fashions that and decides whether he would be male or female. Then he (the angel) says: Would his limbs be full or imperfect? And then the Lord makes them full and perfect or otherwise as He desires. Then he says: My Lord, what about his livelihood, and his death and what about his disposition? And then the Lord decides about his misfortune and fortune.

<http://sunnah.com/urn/263950>

11. Musnad Ahmad 4424

Translation: ...a Jew passed by the Messenger of Allah 'peace be upon him' while he was talking to his companions. Then, Quraish said, "O Jew This man claims to be a prophet." The said to ask him for something that no one knows except a prophet; he came and sat up and asked, "O Muhammad from what it man created?" The prophet said: "O Jew, **each created from a small amount of semen ("nutfah") of man and a small amount of semen ("nutfah") of woman and regarding "nutfah" of man is a thick "nutfah" and from it, bone and nerve. And "nutfah" of woman is a thin "nutfah" and from it, flesh and blood.**" The Jew stood up and said: "This is how they said it before you."

<http://hadith.al-islam.com/Page.aspx?pageid=192&TOCID=35&BookID=30&PID=4206>

iii. Miscellaneous

1. Sahih Bukhari Vol. 4, Book 52, Hadith 306

Al-Hasan bin 'Ali took a date from the dates of the Sadaqa and put it in his mouth. The Prophet said (to him) in **Persian**, "Kakh, kakh! (i.e. Don't you know that we do not eat the Sadaqa (i.e. what is given in charity) (charity is the dirt of the people))."

<http://sunnah.com/bukhari/56/278>

2. Sahih Muslim Book 8 Hadith 3392

Judama daughter of Wahb, sister of Ukkasha reported: I went to Allah's Messenger along with some persons and he was saying: I intended to prohibit cohabitation with the suckling women, but I considered the **Romans and Persians**, and saw that they suckle their children and this thing (cohabitation) does not do any harm to them (to the suckling women).

<http://sunnah.com/urn/233920>

3. Sahih Muslim Book 8 Hadith 3394

Sa'd b. Abu Waqqas reported that a person came to Allah's Messenger (may peace be upon him) and said: I do 'azi (coitus interruptus) with my wife. Thereupon Allah's Messenger (may peace be upon him) said: Why do you do that? The person said: I fear harm to her child or her children. Thereupon Allah's Messenger (way peace be upon him) said: If that were harmful it would harm the **Romans and Persians**.

<http://sunnah.com/urn/233940>

4. Sahih Muslim Book 8 Hadith 3441

'A'isha (Allah be pleased with her) reported: A **physiognomist** visited (our house) and Allah's Messenger (may peace be upon him) was present, and Usama b. Zaid and Zaid b. Haritha were both lying asleep, and he (the physiognomist), said: These feet are related to one another. Allah's Apostle (may peace be upon him) was pleased to hear this, and he was happy and informed 'A'isha (Allah be pleased with her) about it.

<http://sunnah.com/urn/234410>

5. Malik's Muwatta Book 30, Hadith 16

Yahya related to me from Malik that Muhammad ibn Abd ar-Rahman ibn Nawfal said, "Urwa ibn az-Zubayr informed me from A'isha umm al-muminin that Judama bint Wahb al-Asadiyya informed her that she heard the Messenger of Allah, may Allah bless him and grant him peace, say, 'I intended to prohibit ghila but I remembered that the **Romans and Persians** do that without it causing any injury to their children.' "Malik explained, "Ghila is that a man has intercourse with his wife while she is suckling."

<http://sunnah.com/urn/413110>

I. Hamza's Lexical Analysis

'When I use a word,' Humpty Dumpty said in rather a scornful tone, 'it means just what I choose it to mean -- neither more nor less.'

'The question is,' said Alice, 'whether you can make words mean so many different things.'

-Alice in Wonderland

Introduction

Claims of scientific foreknowledge and miracles in scriptural books are a useful tool for the proselytization of any religion; especially in the modern world where a sense of skepticism and education in the sciences would render it difficult for religions to be distinguished from mythology. Hence, their adherents attempt to evolve in their understanding of their alleged holy texts by pursuing new interpretations. Unfortunately, many opportunists go as far as declaring that their new and improved interpretations have always existed in their scriptures.

Hindus¹ and Christians² have made such claims. However, it is undoubtedly Muslim apologists who are in the forefront of exploiting this technique.³ One such apologist is Hamza Andreas Tzortzis, "senior researcher and Lecturer" at the Islamic Education and Research Academy (iERA). Hamza published a paper titled, *Embryology in the Qur'an: A Scientific-Linguistic Analysis of Chapter 23* in November of 2011 which claims that the Qur'an contains information regarding developmental biology that could not have been made in 7th century Arabia by the alleged prophet named Muhammad.

The purpose of this paper is to critically examine the claims made by Hamza Tzortzis in his purported "lexical analysis" of the terms in the Qur'an. The Qur'anic verses in question are 12-14 from chapter 23 which states the following,

(Yusuf Ali translation): "Man We did create from **a quintessence (of clay)** (*sulalatin min tin*); (12) Then We placed him as **(a drop of) sperm** (*nutfah*) in a **place of rest firmly fixed** (*qararin makeen*); (13) Then We made the sperm (*nutfah*) into **a clot of congealed blood** (*alaqah*); then of that clot (*alaqah*) We made a (foetus) **lump** (*mudghahh*); then We made out of that lump (*mudghahh*) **bones** (*idhaamen*) and **clothed the bones with flesh** (*Fakasawna Idhaama Lahman*); then We developed out of it another creature: so blessed be Allah, the Best to create! (14)"

Note: The relevant Arabic terms have been transliterated and can be found in red inside the parenthesis. The English terms in parenthesis are usually the interpretations of the translator and are not explicitly stated in the original language.

Regarding these verses, Hamza states the following on page 5 of version v2.1b,⁴

At first glance, the English translation of the Qur'an's embryonic description seems **uninvolved and simplistic**. However, as this study will show through linguistic analysis of the Arabic Qur'an, each word conveys a depth of meaning that, upon closer look, correlates staggeringly to established reality.

One might wonder if in reality, the Qur'anic verse is "uninvolved" and "simplistic" in the original Arabic as well. It is rather intriguing how the same verse which was described as "uninvolved" and "simplistic" by Hamza himself, mutates into the following monstrosity after Hamza's supposedly legitimate method of lexical analysis;

"Man We did create from "the essential elements required for human life and functioning, found in clay" (sulalatin min tin)⁵; (12) Then We placed him as "the formation of the zygote, via the mingling of two fluids from the mother and the father, which contains two small cell structures (the oocyte and the spermatozoon)" (nutfah)⁶ in "the blastocyst sinking in the endometrium, being completely encased i.e. the process of implantation" (qararin makeen)⁷; (13) Then We made the "zygote" (nutfah) into "the embryo...connected to the cytotrophoblast via a connecting stalk, as if it were hanging or suspended...upon the culmination of two processes - neurulation and the folding of the embryo" where "the embryo appears worm or leech-like" and "obtains its nutrients via contact with the maternal blood vessels" and "the external features of the embryo resembles a blood-clot...due to the formation of the primary cardiovascular system and the lack of blood circulation until the end of the third week." (alaqah)⁸; then of that "hanging leech-like blood suckling clot-like embryo" (alaqah) We made "The development of somites giving the embryo the appearance of a chewed substance" during "the organogenetic period (the development of organs, not yet fully formed)" (mudghahh)⁹ ; then We made out of that "chewed fleshy substance with developed somites undergoing organogenesis" (mudghahh) "the formation of the axial, limb and appendicular skeleton" (idhaamen)¹⁰ and clothed "the formation of the axial, limb and appendicular skeleton" with "the migration and aggregation of the muscles cells around the developing limb and axial skeleton, to form muscles, tendons and connective tissue" (Fakasawna Idhaama Lahman)¹¹; then We developed out of it another creature: so blessed be Allah, the Best to create! (14)"

A single word such as "*alaqah*" (i.e blood clot) has a meaning that is now four sentences long. Words such as "*qararin makeen*" or "place of rest" (i.e womb) now refer to various technical stages of developmental biology involving discrete terms like blastocyst and implantation. Even the least curious person in the world should have raised a red flag when presented with such a flamboyant display of the apologetic tactic of putting 'lipstick on a pig.'

Nevertheless, in order to understand whether Hamza's claims have any substance to them, a careful examination of his claims and sources must be performed. However, it would also be important to scrutinize the logical validity¹² of Hamza's so-called lexical analysis. Consider the following counterexample from Shakespeare's *The Tempest* (Act 1, Scene 2);

The Tempest Act 1, Scene 2

**“What seest thou else
In the dark backward and abysm of time?”**

The following is a demonstration of what Hamza calls “**lexical analysis**” applied to the above lines from Shakespeare.

“The statement from Shakespeare, asks what one can see in the “dark” “backward” and “abysm” of time?

The word “**dark**” carries various meanings such as: absence of light, night, dark color, black, being hidden, invisible, absorbing more light than it reflects, ignorance, immoral (all definitions taken from *Oxford English Dictionary*).

The word “**backward**” has a myriad of meanings such as: to put or keep back, delay, retard. To send back, return, towards one's back or the back of anything, to bend backward, fall backward, be pushed backward, to retire, towards a worse state, unwilling, slowness of conception or action (all definitions taken from *Oxford English Dictionary*).

The words “**abysm**” has several meanings including: great deep, bottomless chasm, infernal pit, hell, void space, a condition from which recovery is impossible, to sink in (all definitions taken from *Oxford English Dictionary*).

Scientific Interpretation

Upon a linguistic and scientific analysis of the Shakespearean words, the myriad of meanings of the terms in the statement corresponds to what is known today in modern astronomy. This statement is describing the existence and nature of black holes. The meanings of the word “**dark**” such as “absence of light”, “black”, “being hidden”, “invisible” “absorbing more light than it reflects” are describing the dim nature of black holes where the strength of the gravitational field would prevent even light from escaping. This characteristic causes black holes to be “hidden” from human view due to “the absence of light” i.e. the light from the black holes would not escape and reach the human eye. The term “**backward**” coupled with the term “**dark**” paints an image of either light or any other object “falling backwards” into the black hole. The term “**abysm**” refers to the “deep” or “bottomless” nature of black holes as well as the fact that black holes consist mostly of empty, “void space”. The term “**backward**” which carries the meaning of “slowness” coupled with the term

“**time**” refers to the gravitational time dilation or the slowing down of time in the black holes. These phenomena are described by the theoretical physicist Jim al-Khalili in the following manner;

Page 40, “Let us consider what happens when an even bigger star, say twenty or thirty times the mass of the Sun, stops shining. Such a star will not be able to resist its own gravitational collapse. It will keep on collapsing until it has been squashed to such a density that even its own light cannot escape its gravitational pull. To someone watching from a distance the star will suddenly **disappear from view**. It has become **a black hole**”

Page 66, “A black hole corresponds to the case when a very heavy, yet point sized, object causes the rubber (space) to be curved and stretched down into an **infinitely deep** cone-shaped hole. The event horizon here corresponds to a circle somewhere inside the rim of this **bottomless pit** beyond which there would be no escapes.”

Page 70, “However, because of the way space and time are mixed up inside a black hole, you continue to fall at the same rate as before. It is just that your **time will slow down**. This is known as gravitational time dilation.”

Page 84, “So the particles of light would not be fast enough to escape its gravitational pull. Such a star must therefore look **black** to the outside world. In fact, it would be **invisible**”

Page 84, “Black holes, as we understand them today, comprise almost entirely of **empty space**! In fact they are literally holes in space, inside which the properties of space and **time are completely altered**.”

Jim Al-Khalili, (1999) *Black holes, wormholes, and time machines*. Institute of Physics Publishing. Philadelphia.

Such pretentiousness is characteristic of the discourse established by Hamza in his “scientific-linguistic analysis” of the Qur'an. Identical to the method used above in the counterexample from Shakespeare, Hamza chooses a Qur'anic word and lists numerous definitions found in dictionaries while ignoring the context, connotations or the mundaneness of the sentence. If that wasn't unfortunate enough, Hamza's analysis is made worse than the counterexample from Shakespeare due to his casual assigning of wrong or fabricated or reinterpreted definitions (that are not found in any dictionaries) to the terms in order to establish his claims. Rubbing salt in the wound, Hamza erroneously stretches the scientifically known facts to match the distorted text when stretching the text beyond breaking point is insufficient for his aims. Yet in other instances, Hamza can be seen making assertions either with no justification or justifying it with the weakest of reasoning.

Furthermore, Hamza's method of "lexical analysis" is hardly a reliable method. His technique of associating words with findings in modern science can also serve to associate the Qur'an with blatant errors. For example, consider the following verses in the Qur'an;

Verse 71:16

وَجَعَلَ الْقَمَرَ فِيهِنَّ نُورًا

Transliteration: Waja'ala al-Qamara fihinna **Nooran**

Translation: And made the moon therein **a light**

Verse 25:61

وَقَمَرًا مُنِيرًا

Transliteration: Wa-Qamaran **Muneeran**

Translation: And a moon **giving light**

The moon has been described using the cognates, "noor" and "muneer". Lane's Arabic-English lexicon and Hans Wehr Modern Dictionary (2 dictionaries extensively used by Hamza in his paper) define these two terms in the following manner;

<p>نُورٌ <i>Light</i>; syn. ضياءٌ (S) or ضَوْءٌ (M, A)</p>	<p>نُورًا II to flower, blossom, be in bloom; to put forth or bear (a blossoms); to light, illuminate, fill with light, furnish with lights (ل or ا s.th.); to shed light (ل or ا on s.th.); to enlighten (ل or ا s.o.); to light (a lamp) IV اَنَارَ <i>andara</i> to light, il-</p>
<p>مُنِيرٌ see نَيْرٌ, in two places. — See also نَائِرٌ</p>	<p>نَيْرٌ <i>Giving light, shining, bright, or shining brightly</i>; (A, Mqab;) as also مُنِيرٌ and مُسْتَنِيرٌ</p>

The word "noor" and "muneer" have a myriad of meanings which include "light, to flower, to blossom, to enlighten, to shed light, giving light, shining rightlly etc"

Scientific Interpretation

The myriad of meanings for "noor" and "muneer" such as "to shed light", "giving light" correspond to a misunderstanding about reality. These words suggest that the moon is giving or shedding its own light while the truth is that it merely reflects the light of the sun. Thus to conclude this section, the fact that a 7th century document contains statements confirming erroneous scientific assertions and contradicting what is considered as established reality, makes evident the nature of the Qur'an as a sign-post to the ignorant.

Let it be remembered that the purpose of the above counterexample is not to claim that the Qur'an unquestionably states that "the moon sheds its own light" but to demonstrate the utter unreliability of Hamza's "lexical analysis" as it paves way for novel errors in the Qur'an just as easily as Hamza retrofits novel science in to the same book. A Muslim, in response, may say that the words "*noor*" and "*muneer*" do not necessarily mean "to shed light" or "giving light" when used in the Qur'an. This may very well be true but to suggest such a contention is to automatically reject the validity of Hamza's "lexical analysis" i.e. if a Muslim is free to reject the errors "lexically analyzed" into the Qur'an then a skeptic is just as entitled to reject the science that has been "lexically analyzed" into the Qur'an since the former rejection entails that the "lexical analysis" does not necessarily produce accurate results. The important point to be understood here is that one's ability to correspond associated words in a dictionary to either scientific or false beliefs, does not in any shape of form convey the intended meaning of the terms in question.

Nevertheless, the logical invalidity of Hamza's lexical analysis can be formally demonstrated using the tools of "formal logic" (see reference).¹³ However, one needs to have a good understanding of a certain fallacy called "**the fallacy of the undistributed middle**" in order to comprehend the fallaciousness of Hamza's lexical analysis.

The "fallacy of the undistributed middle" can be defined as "inferring that because an individual, group or philosophy shares some aspects or attributes with another, it shares all other aspects or attributes."¹⁴ For example, consider the following 3 arguments;

1) All Pagans are mortal	1) Some dogs are pets	1) Some Humans are Fathers
2) All Muslims are mortal	2) Some cats are pets	2) All Women are Humans
3)∴ All Muslims are pagans	3)∴ Some cats are dogs	3)∴ Some Fathers are Women

The three arguments presented above are intuitively absurd. This is an example of the fallacy of the undistributed middle. For example, in order for the first argument to be valid, it is necessary that there be a premise where the middle term "mortal" is **distributed** at least once i.e. there should be at least one premise that either states "all mortals are Pagan" or states "all mortals are Muslim". In the absence of such a premise, the conclusion cannot be logically derived and therefore the argument is considered invalid.

Yet it is not beyond the ability of a sophist to present a similar invalid argument in a convoluted manner which disguises its inherent fallacy and deceives the untrained eye. The key technique to the deception is to present an argument in which the premises or the conclusion do not sound intuitively absurd as the above arguments. For a mild example, consider the following argument;

- 1) Some Philosophers are American
- 2) All Scientists are Philosophers
- 3) \therefore Some Americans are Scientists.¹⁵

Each of the above three statement are individually reasonable. There is nothing absurd about the claim that some Americans are scientists and some others are philosophers. One could also consider science as a philosophy and thus claim that all scientists are philosophers. Thus, the three statements are sensible. However, this argument too commits the fallacy of the undistributed middle. If one were only given the information provided in the 2 premises, one would not be able to logically derive the given conclusion. The given conclusion necessitates the premise that “All philosophers are scientists” in order for the argument to be logically valid. In the absence of the necessary premise, the argument is fallacious despite all the three statements being reasonable claims.

Similarly, the argument behind Hamza’s “lexical analysis” has statements that are at least technically plausible. Yet a good understanding of the “fallacy of the undistributed middle” should enable one to notice its blatant fallaciousness. For elaboration, Hamza’s argument can be expressed as the following deductive argument (Let “Y”= a modern scientific idea and Let “X” = a word or phrase);

- 1) Description of "Y" uses "X"
- 2) A description in the Quran uses "X"
- 3) Therefore, the description in the Qur'an is the description of "Y"

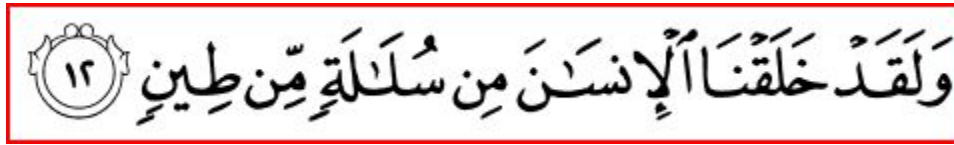
Hamza’s argument is thus similar to a claim that says a “cave” can also mean a “skyscraper” because both words can be described using common words like “shelter” or “home.” Such a silly argument would be easily dismissed. The formal fallacy associated with the argument is that of the undistributed middle. For the argument to be valid, it is necessary that there be a premise stating that “all descriptions using “X” are a description of “Y”; or in the case of the analogy, it is necessary that there be a premise stating that “Anything described using “shelter” is a skyscraper”. Such premises are quite clearly false and therefore Hamza’s argument is hopelessly fallacious.

The clearest example of Hamza arguing in the above form can be found in his discussion of the two words “*qararin makeen*” or “safe place”. The phrase in the Qur'an states “*Then We placed him as semen (nutfah) in a safe place (qararin makeen)*” One does not require much thought to understand what a 7th century person could mean by saying seminal fluid has been placed in a “safe place”. It is merely a poetic way of describing the womb of the mother; the “place” where the embryo grows in “safety.” Yet Hamza ignores this banal explanation and states that “a safe place” refers to “the implantation of the blastocyst” because this too shares the attribute of being “a safe place” Based on this association, Hamza concludes that the Qur'an, a 7th century text refers to the “implantation of the blastocyst”.

As stated before, this argument from Hamza is invalid as it commits the “fallacy of the undistributed middle”. With this specific argument, Hamza implicitly and undeniably asserts the hidden premise that “all descriptions using the phrase ‘safe place’ are a description of the implantation of the blastocyst”. This without a doubt is a false statement since one could also refer to the mother’s womb in general as “a safe place” without any knowledge of the process of implantation. A mere correspondence between individual words and a scientific description does not establish what the *intended meaning* of the sentence was. Most of Hamza’s “lexical analysis” follows the fallacious reasoning presented in the example of “*qararin makeen.*”

However, the greater irony of Hamza’s paper is that despite repeating this fallacy in every instance possible, he still had to resort to misrepresented or mistranslated or fabricated definitions as well as other inconsistencies in order to validate his claims. Despite the fact the Hamza’s claims have been demonstrated to be logically invalid, the paper will nevertheless provide a scrutiny of the 8 stages of Islamic embryology emphasized in Hamza’s paper.

1. Extract of Clay (*Sulalatin min Tin*)



Transliteration: Wa-laqadh Khalaqna al-Insaana min **Sulalatin min Tinin**

Translation: And certainly did We create man from an **extract of clay**.

i. Summary of Hamza's claims.

Hamza claims that the phrase “*sulalatin min tin*” or “extract of clay” refers to the “**essential elements of the body**.” This is concluded from the following definitions of “*sulalatin*”; 1) “extract”, 2) “something drawn out” and 3) “the most subtle, purest and essential constituent.” Hamza uses the authority of Lane’s Lexicon and a scholar name Shafi Usmani to support his claim.

ii. Refutation of Hamza's claims.

(1) Misrepresentation of the Meaning of Sulalatin.

Can “*sulalatin*” refer to the chemical elements found in the human body? The claim can be verified by examining the definitions of “*sulalatin*”. Hamza states,¹⁶

is formed from a *sulaalah* of clay. The word *sulaalah* means an extract²⁹, something drawn out³⁰ or the most subtle, purest and essential constituent.³¹

Hamza pretends to provide two kinds of meanings when in fact they are the same. He wants to imply that “**an extract**” or “**something drawn out**” is different from “**the purest and essential constituent**”. A closer look at Hamza’s source for the above definition clarifies this point significantly. The source is a well respected Arabic-English dictionary called Lane’s Lexicon and it states the following;¹⁷

سُلَالَةٌ What is, or becomes, drawn forth, or drawn forth gently, from, or of, a thing: (M, K:) or so سُلَالَةٌ شَيْءٍ: (S:) [an extract of a thing: and hence,] the clear, or pure, part, or the choice, best, or most excellent, part [of a thing]; (Mgh; and Ksh and Bd and Jel in xxiii. 12;) because drawn from the thick, or turbid, part. (Mgh.) It is said in the Kur [xxiii. 12] وَلَقَدْ خَلَقْنَا

Text 1.1 Lane's lexicon on *Sulalah*

وَلَقَدْ خَلَقْنَا الْإِنْسَانَ مِنْ سُلَالَةٍ مِنْ طِينٍ, meaning [And verily we created man from] what was drawn forth from every kind of dust, or earth: (Fr, TA:) or from a pure, or choice, or most excellent, sort of earth or clay. (Ksh, Bd, Jel.) — And [hence,] The sperma genitalis of a man, or human being; (S, TA;) what is drawn from the صُلْبُ [app. here meaning loins] of the man and from the تَرَائِبُ [pl. of تَرْبِيَةٌ, q. v.,] of the woman: (AHeyth, TA:) the water (مَاءٌ) that is drawn from the back. ('Ikrimah, TA.) — See also

Text 1.2 Lane's lexicon on *Sulalah*

This trivial piece of knowledge is even mentioned in the source used by Hamza to present the meaning of “*sulalatin*”. Hamza uses Lane’s lexicon, in order to provide the meaning “**something drawn out.**” Hamza’s aspiration is for the reader to believe that when the Qur’an says, “extract of clay” it refers to the individual chemical elements that, according to Hamza, *can* be “**drawn out**” of clay (but were not actually drawn out from some clay - rather they are elements that he says humans and clay have in common). However, Hamza has quite obviously misrepresented Lane’s Lexicon.

Lane’s lexicon, the source used by Hamza himself defines the “extract of a thing” as “**the clear or pure part...of a thing...because drawn from the thick, or turbid part.**” Thus according to Lane’s Lexicon, the “extract of clay” would be defined as “**the clear of pure part**” of clay. This certainly reflects the common understanding behind phrases such as “extract of honey”, “extract of iron” or “**extract of clay**” as it refers to drawing out honey from honey combs, extracting iron from iron ores and extracting clay in clay pits. In all the cases above, “extract of X” always means “X” in a purer form.

Even more ironic is the fact that Lane’s lexicon directly quotes Sura 23:12 and explains the meaning of “*sulalatin min tin*” as “**a pure or choice or most excellent sort of earth or clay.**” Yet Hamza hides this fact and wants his readers to believe in a definition that lacks both common sense and academic support. Upon further analysis, Hamza’s definition is meaningless and scientifically ludicrous as demonstrated in the next point.

On a side note, the Qur’an repeats “the creation of humans from clay” story several times without using the term “*sulalatin*” or “extract”. These verses are (7:12), (15:26, 28, 33), (17:61), (32:7), (38:71, 76) and (55:14); and they speak of the creation of man from clay and not merely its “extracts”. However, these verses in their correct context are all referring specifically to the creation of the mythical Adam (who according to Muhammad was 90 feet tall¹⁸ and lived for a thousand years¹⁹). With this point in mind, it is only reasonable to suggest that Sura 23:12 is referring to the creation of Adam.

Nevertheless, Hamza has no grounds for proposing that 23:12, in contrast to the other verses, is referring to humans in general. Classical Islamic scholars such as ibn Kathir understood 23:12 to refer to the creation of Adam. In particular, verses 32:7-8 parallel 23:12-13 and strongly indicate that the latter just refers to Adam.

32:7-8 Who perfected everything which He created and began the creation of man from clay. Then He made his posterity out of the extract of a liquid disdained.

It is conceivable that Hamza might claim that the Qur’an repeats “the creation of humans from clay” in a few verses that refer to all humans in general rather than Adam specifically. The following verses may be used as example;

6:2 He it is created you from **clay**, and then decreed a stated term (for you).

37:11 Them have We created out of **a sticky clay!**

Even if one were to consider the above two verses, along with 23:12, to refer to humans in general (as opposed to Adam specifically), the verses 6:2 and 37:11 do not use the term “*sulalatin*” or “extract” and would be in stark contrast to the following claim made by Hamza;²⁰

interpretation is *sulaalah* (extract, something drawn out etc.). This clearly indicates that it is not clay from which the human is created, but an *extract* of clay which alludes to the

Since sura 6:2 and 37:11 claim that humans are made from clay. Hamza is no longer in a position to make the claim that it is “**not clay from which the human is created, but an *extract* of clay.**”

A comment needs to be made on Hamza’s use of a “jurist and exegete” named Shafi Usmani on page 13 who “in his eight volume exegesis of the Qur’an” stated that “*sulalatin min tin*” refers to “special elements extracted from earth”. Perhaps it is unintentional, but the naïve or the novice reader may be led to believe that the above mentioned scholar is someone who may have lived a long time ago and that he is being quoted for making statements unprejudiced by modern scientific knowledge. Suspiciously, Hamza does not even provide a proper reference for this quote as his reference merely says “Shafi Usmani. Mariful Qur’an. Vol. 6, page 307” as it does not provide a year of publication. Whether it was accidental or intentional, it should be noted that Shafi Usmani is only a 20th century scholar²¹ who seems to be forming the same erroneous scientific conclusions as Hamza does. The point to be asserted is that Shafi Usmani’s quote does not provide any support to establish the soundness of Hamza’s conclusions.

(2) Scientific Absurdities and Meaninglessness.

Having demonstrated the grievous errors in Hamza’s attempt to establish the meaning of “*sulalatin min tin*” as the chemical elements found in clay, it would nevertheless be interesting to analyze how Hamza arrived at this conclusion and examine any related scientific questions that may arise.

How does Hamza reach the conclusion of “chemical elements found in clay” from the simple definition of “extract of clay”? Hamza states on page 13,

By applying a scientific analysis to this verse, it becomes clear that this stage appertains to certain essential chemical components. It is significant that these chemical components are found in clay. They include: Oxygen, Carbon, Hydrogen, Nitrogen, Calcium, Phosphorus, Potassium, Sulfur, Chlorine, Sodium, Magnesium and Silicon; all of which are required for human functioning and development.³⁵ This is explained by the jurist and exegete Shafi

However, Hamza fails to show any “scientific analysis” that supposedly clarifies how “*sulalatin min tin*” “**appertains to certain essential chemical components.**” Worsening the situation is the fact that Hamza does not even provide a reference or a source that lists the chemical elements found in clay.

Nevertheless, the *Chambers Dictionary of Science and Technology* defines clay as, “**a fine textured, sedimentary, or residual deposit. It consists of hydrated silicates of aluminum mixed with various impurities.**”²² The main elements in clay are thus silicon, aluminum, hydrogen and oxygen. The other human-required elements that Hamza lists (such as nitrogen, sodium etc) are only found in trace amounts in clay and can be regarded as contaminants, which is a fatal problem given the definition of “*sulalah*” in the lexicon as the “essence or purest part” of a thing. Thus the only elements that fit Hamza’s unjustified description of “*sulalah*” are silicon, aluminum, hydrogen and oxygen.

The rather ironic fact is that silicon and aluminum, the main components of clay, are found only in trace amounts in the human body.²³ Aluminum can even be toxic to human beings.²⁴ This would not be the expected outcome of Islam’s creation story i.e if Adam was created from clay, and human beings are descendents of Adam then one should reasonably hypothesize to find aluminum and silicon in much greater amounts. However, as the oceanographer Tom Fenchel explains,²⁵

While all these elements are present on the surface of Earth, their concentration differs between organisms, soil, and seawater. Silicon, for example, is the next common element in the crust (after oxygen), but it plays a rather marginal role in organisms. Aluminium, another common element, does not as far as is known, play any biological role. Conversely, molybdenum and cobalt are essential elements that

Silicon and Aluminum have extremely limited, if any, roles to play in the maintenance of life. Such incongruence fortifies the idea that this is merely a repetition of the ancient myth²⁶ regarding the creation of humans from clay.

However, the situation of Hamza and other Muslims who wish to assert that “*sulalatin min tin*” refers to the chemical elements found in clay is worsened by the sheer futility of their logical reasoning. Their reasoning is as follows;

- 1) “Extract of clay” means “anything that can be extracted from clay”.
- 2) Chemical elements can be extracted from clay.
- 3) Therefore, “extract of clay” means “the chemical elements in clay”

While it is not clear what scientific processes Hamza plans to use to extract chemical elements such as aluminum, silicon, hydrogen and oxygen from clay, one can definitely grant the hypothetical possibility of these elements being extracted. However, this is where the blatant meaninglessness of the Qur’anic words becomes apparent. If one grants the validity of defining “extract of X” as “the chemical elements in X”, then Muhammad could have substituted the word clay with the word

for any of the vast majority of the substances on earth. They could be sand, rocks, stones, gems, plants, animals, *camel dung* etc and many others as they are all bound to have a few elements in common with the human body.

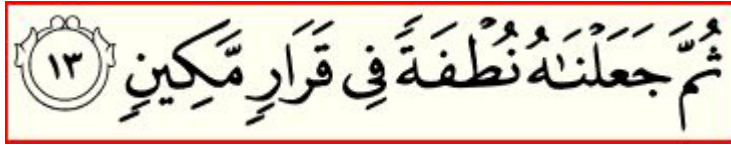
This triviality is due to the fact that certain elements such as hydrogen, oxygen, carbon etc are among the most abundant elements in the universe and thus it would not be surprising to find a great number of substances on earth to have any of these elements in common.²⁷ Thus if the word “clay” can be substituted with a multitude of other words, it would suggest that there was **no inherent meaning or purpose** in using the term “clay”.

Furthermore, if one is to grant the validity of the defining “extract of X” as “the chemical elements in X” that can be extracted on an atomic level, then one would also have to grant the validity of this reasoning being applied on the subatomic level (such as protons, electrons etc) i.e using Hamza’s reasoning, one could define “extract of X” as “subatomic particles that make up the chemical elements in X”. However, this truly renders the Qur’anic usage as well as the daily language usage of the word extract absolutely meaningless. Given that every substance known to mankind are made of these fundamental subatomic particles, one would be justified in making utterly pointless statements like “The Kaaba in Mecca is made from an extract of bacon and wine.” Since Kaaba, pigs and wine have chemical elements made from the same subatomic particles, there would be no factual error in this statement **if** Hamza’s reasoning is valid.

iii. Summary of Refutation.

Hamza Tzortzis does not provide any valid reasons for his conclusion that the words, “extract of clay” (*sulalatin min tin*) refers to the chemical elements that make up the composition of clay. Hamza sought to establish this conclusion by misrepresenting and/or ignoring the contradicting statements in the Qur’an. Hamza also resorted to quote-mine Lane’s lexicon from which he hoped to support his conclusion. Furthermore, upon a scientific and logical analysis of Hamza’s reasoning, it was apparent that his conclusion renders the usage of the word, “extract” utterly meaningless. With these objections against Hamza’s conclusions, the only valid definition of the words “extract of clay”, that is also support by the academic lexicon, is that it is referring to “the purest form of clay extracted from its natural sources”

2. Drop of Fluid (*Nutfah*)



Transliteration: Thumma Ja'alnaahu **Nutfatan** fi Qararin Makeen

Translation: Then We placed him as **a small amount of semen** in a firm lodging

The next term that Hamza Tzortzis believes to contain convenient meanings is the Arabic word, "*nutfah*". Hamza seems to have placed much emphasis and importance on this term and therefore his claims pertaining to this word will be meticulously analyzed.

i. Summary of Hamza's claims.

1. Hamza states that "*nutfah*" has several meanings. One of the definitions for "*nutfah*" that Hamza has placed much emphasis on is, "**a singular entity which is a part of a bigger group of its kind**" and he claims to base this on a well-respected Arabic dictionary known as "*Lisan al-Arab*".²⁸

2. A hadith from Sahih Muslim is used to claim that Muhammad stated that "**the male and female reproductive substances mix.**"

3. The verse 75:37 from the Qur'an and its exegesis given by a 14th century scholar named Ibn Kahir are used to claim that "*nutfah*" does not refer to semen but something in the semen (hinting at the sperm)..

4. Verse 32:8 contains the words "*sulalatin min ma'in maheen*" (extract of fluid disdained). Hamza repeats his erroneous conclusion regarding the term "*sulalah*" or "extract" in order to claim that "*nutfah*" refers to some component in the semen and not the semen itself.

5. Hamza then claims that his conclusion that "*nutfah*" does not refer to semen, is supported by Islamic scholars, namely "Sa'id ibn Mansur, Ibn Abi Hatim" etc.²⁹ More importantly, Hamza gives the following reference as his source, "**Ibn Rajab's Jami' al-'Ulum wal-Hikam.**"³⁰

6. The statements of Ibn Abbass, the cousin of Muhammad who is considered as the first exegete of the Qur'an, are used to claim that "***nutfah* is the mixing of the fluid of the man and the fluid of the woman.**"³¹ Here, Hamza embarks on a new mission where he attempts to conclude that "*nutfah*" also refers to the process of fertilization (i.e. sperm entering the ovum).

7. The verse 76:2 contains the words "*nutfahatin amshajin*" (*nutfah mixture(s)*). The grammar of this verse is used by Hamza to claim that "*nutfah*" refers to the zygote.


8. From all the above points, Hamza concludes that “*nutfah*” means drop of semen containing sperm, ovum as well as the process of fertilization and zygote.³²

Note: Hamza incorrectly refers to the ovum as an oocyte (which is a precursor to the ovum).

ii. Refutation of Hamza’s Claims.

Perhaps one of the indications of desperation is when an arguer insists on redefining words in a manner that suits his wishes. The arguer here is Hamza Tzortzis whose desire is to establish the meaning of the Arabic word “*nutfah*” as any technical term in contemporary biology that is even flimsily related to its actual meaning. Hamza rather incompetently attempts to assign this simple, single Arabic term, four different meanings. They are “fluid drop containing sperm”, “fluid drop containing ovum”, zygote and the process of fertilization. Certainly, anyone possessing even a speck of skepticism should already be wondering if a pig could sport all that lipstick.

However, there is something peculiar about the first two meanings provided by Hamza for the word “*nutfah*.” He defines it, in a much contrived manner, as **a drop of fluid containing either sperm or the ovum** as opposed to defining it as a sperm or an egg. This may not be clear for those reading Hamza’s paper as he gives the impression that he is claiming that “*nutfah*” refers to the sperm itself but he does not state so in his version 2.1b. In fact, he clarifies his position in a facebook message (for full context, see appendix A)



Hamza Andreas Tzortzis This hadith supports the view that the *nutfah* is from the male and the female, that was the intended use. The rest of the hadith is taking about the fluid of the *nutfah* and its role in forming parts of the body. My initial thoughts are that this is neither confirmed or unconfirmed scientifically (and is not related to fertilisation so I didn't use the whole hadith). The words forming can mean to have an effect etc, **I never claim the *nutfah* is a sperm**, rather I suggest the *nutfah* is a sperm-drop, as it is an extract of fluid from the semen indicating there is something within that extract necessary for fertilisation. I have seen some atheist

This is particularly fascinating since he did claim that *nutfah* refers to sperm in his version 1.1³³;

1. By looking at the Arabic language, it can mean a dribble, a trickle, a drop or semen³³. *Nutfah* can also mean a singular entity which is a part of a bigger group of its kind. **Therefore, a *nutfah* could be a single sperm** from a collection of millions of sperms contained in semen, or a single female egg from a group of many other eggs in the Ovaries.³⁴

Even though Hamza Tzortzis retracted his original position regarding “*nutfah*”, the usual tragedy of incompetent apologetics has caused many zealous Muslims to continue to claim that “*nutfah*” does refer to a sperm or an egg on the authority of Hamza’s paper.

Nevertheless, a careful examination of Hamza’s arguments and sources further reveals many levels of misrepresentation, quote-mining, suppression of evidence as well as general dishonesty sown in his paper through the use of mistranslation, improper referencing and inept researching. The veracity of these accusations are clearly evidenced and demonstrated below in the point-by-point refutation of Hamza’s claims.

Note: In order to achieve a broader and deeper understanding of the topics and counter-arguments discussed below, it would be beneficial to understand the following three terms; “*nutfah*”, “*ma’a*” and “*maniyy*”. “*Nutfah*” is the word under discussion and its meaning will be explained in point (1). “*Ma’a*” is the commonly used Arabic word for water and it may also refer to liquid or fluid in general.³⁴ “*Maniyy*” is the Arabic term for semen.³⁵ If any of the text below contains these words, they are included as italicized transliterations. The reason for this measure is to ensure clarity of words as well as to discourage confusion stemming from inaccurate or modern interpretations found in recent translations.

(1) Misrepresentation of the Meaning of “*nutfah*”

Hamza begins by stating the following regarding the definition of the word “*nutfah*”,

- By looking at the Arabic language, it can mean a dribble, a trickle, a drop or semen.³⁷ *Nutfah* can also mean a singular entity which is a part of a bigger group of its kind. This is suggested by the classical dictionary *Lisan Al-Arab* which explains *nutfah* as “a single drop of water remaining in an emptied bucket”.³⁸

Hamza’s initial desire was to define the word “*nutfah*” as a single sperm cell or ovum (see appendix) and this was in order to present his holy book with the semblance of scientific rigorousness. Yet, much like the case with “*sulalatin min tin*”, Hamza’s only hope is to redefine the keywords in a manner that it suitably bends to match his predetermined conclusions. Hence, Hamza sticks stubbornly with a definition he fabricated in version 1; which is “**a singular entity which is a part of a bigger group of its kind.**” Since it was pointed out that **no such definition exists** in any academic lexicons or dictionaries, Hamza’s new excuse is that the above definition is “suggested” by the definition found in a reputed Arabic lexicon called *Lisan al-Arab*. Hamza claims that *Lisan al-Arab* defines “*nutfah*” as “**a single drop of water remaining in an emptied bucket.**” There are two factors that need examination; a) The actual words in *Lisan-al-Arab* & b) The strength of Hamza’s inference.

(a) What does Lisan-al-Arab say?

Hamza gives the following translation for the words in *Lisan al-Arab*, “**a single drop of water remaining in an emptied bucket.**” Hamza resorts to distorting the text, which in this case is in the form of a mistranslation. The Arabic text of Lisan-al-Arab states the following,³⁶

وَالنُّطْفَةُ وَالنُّطَافَةُ: الْقَلِيلُ مِنَ الْمَاءِ، وَقِيلَ: الْمَاءُ الْقَلِيلُ يَبْقَى فِي الْقِرْبَةِ، وَقِيلَ: هِيَ كَالْجُرْعَةِ وَلَا فِعْلٌ لِلنُّطْفَةِ.
وَالنُّطْفَةُ الْمَاءُ الْقَلِيلُ يَبْقَى فِي الدَّلْوِ؛ عَنِ اللَّحْيَانِي أَيْضاً، وَقِيلَ: هِيَ الْمَاءُ الصَّافِي، قَلٌّ أَوْ كَثْرٌ،

Transliteration: Wa al-**nutfah** wa al-Nutaafah: al-qaleel min al-ma’a, waqeela: al-ma’a al-qaleel yabqa fi al-qirbah, wa qeela: hiya kal-jur’ah wa la fi’ala lil-nutfah.

Wa al-nutfah al-ma’a al-qaleel yabqa fi al-ddaloo; an al-lihayani aydan, wa qala: hiya al-ma’a al-safee, qalla aw kathar

Translation: And the “*nutfah*” and the “*nutaafah*”: Small amount of water. And it is said: the little water remaining in the waterskin. And it is said: it is like a dosage and there is no verb for “*nutfah*”.

And the “*nutfah*” is the little water remaining in the bucket; Also Lehayani said: it is pure water, little or a lot

The bolded statement is the sentence referred to by Hamza. The following are the meanings of some of its keywords;

- 1) **ma’a**: Commonly used term for water, (as explained above).
- 2) **Qaleel**: “few; small; or little, in number, quantity, or amount; scanty – a small quantity”³⁷

Thus an accurate translation of the definition of “*nutfah*” given in *Lisan al-Arab* is the following, “**The small amount of water and it is said: The little water remaining in the bucket.**”

Hamza due to his lack of integrity decided that the term “*qaleel*” can be translated as “**a single drop**” when the more accurate translation that matches both academic dictionaries as well as daily usage of the word would have been, “**a small amount**” or “**little**”. Additionally, the words for “a single drop” are “*al-qatara al-wahida* (القطرة الواحدة)”³⁸.

The intention of the Muslim apologist is clear; he wants the word “*nutfah*” to be associated with the word “**single**.” The purpose of which is to show a correlation with scientific statements such as, “a **single** sperm fertilizes a **single** ovum” or “Together, these gametes form a **single** cell.”³⁹ Since there is no such association, Hamza nonchalantly moves on to concoct an association.

Momentarily *ignoring* the fact that a mere association with the word “single” does not in any manner justify Hamza’s ambitious conclusions, it is rather shocking and pitiful that he continues to build support for his case on such trivialities as a biased and inaccurate translation of a word.

Nevertheless, the much more important task at hand is to verify the strength of Hamza’s inference which concludes that his preferred and invented definition of **“a singular entity which is a part of a bigger group of its kind”** is “suggested” by the actual meaning provided in *Lisan al-Arab*.

(b) Strength of Hamza’s inference.

- By looking at the Arabic language, it can mean a dribble, a trickle, a drop or semen.³⁷ *Nutfah* can also mean a singular entity which is a part of a bigger group of its kind. This is suggested by the classical dictionary *Lisan Al-Arab* which explains *nutfah* as “a single drop of water remaining in an emptied bucket”.³⁸

Having already established the accurate translation of the definition in *Lisan al-Arab* as **“The small amount of water ... the little water remaining in the bucket,”** it is important to analyze the validity of Hamza’s inference. Hamza claims that the definition in *Lisan-al-Arab* suggests his newly invented definition, **“a singular entity which is a part of a bigger group of its kind.”**

Only a lack of common sense and utmost desperation would allow one to equate the two very distinct concepts. It is the equivalent of referring to a “small heap of sand” as a “grain of sand.” In fact, one can conclusively claim that the notion of “a singular entity” cannot be inferred from the statement “the little water remaining in the bucket” since by no stretch of imagination is the small yet **macroscopic** amount of water remaining in a bucket equivalent to the “singular entity of water” or a water molecule which is not even nanoscopic, let alone microscopic (the surface area of which is 9×10^{-20} square meters⁴⁰ or a decimal point followed by 19 zeroes). Thus, Hamza Tzortzis is wrong regarding the accuracy of the translation of the statement in *Lisan al-Arab* as well as on his inference.

In a preliminary conclusion, upon close examination of Hamza’s evidence, it is blatantly clear that Hamza resorted to build his case for “*nutfah*” on an invented definition that was inferred from an inaccurate translation using invalid reasoning.

Yet on a different note, one may be wondering if *Lisan-al-Arab* states anything else regarding “*nutfah*”. Unsurprisingly, Hamza chose to suppress all the information in *Lisan al-Arab* that refutes his wishful thinking. The following can be found in *Lisan al-Arab*,⁴¹

الجمع فقال: النطفة الماء الصافي، والجمع النطاف، والنطفة ماء الرجل، والجمع نطف. قال أبو منصور: والعرب تقول للمؤبّهة القليلة نطفة، وللماء الكثير نطفة، وهو بالقليل أخص، قال: ورأيت أعرابياً شرب من ركيّة يقال

Translation: "...And "nutfah" is the water of the man and the plural is "nutaf". Abu Manzur said: And the Arabs called little water "nutfah" and plenty of water "nutfah" and it is more common for little (water)."

فجعل الخمر نطفة: تقطع ماء المزن في نطف الخمر وفي الحديث: قال لأصحابه: هل من وضوء؟ فجاء رجل بنطفة في إداوة؛ أراد بها ههنا الماء القليل، وبه سمي المني نطفة لقلته. وفي التنزيل العزيز: ألم يك نطفة من مني يمّنى.

Translation: "...And in the hadith: He said to his companions: is there any for ablution? So a man came with "nutfah" in a vessel; by it he meant "little water". And by this semen (*maniyy*) is called "nutfah" for its small amount. And in the revelation: Was he not a "nutfah" of semen (*maniyy*) ejaculated?"(Quran, Sura 75:37)

Thus *Lisan al-Arab*, apart from stating that "nutfah" means little or a small amount of water, also describes "nutfah" specifically as the (macroscopic) amount of water that was carried in a vessel for a man to perform his ritual ablution. Much more significantly, the well-respected lexicon also states that "**semen (*maniyy*) is called "nutfah" for its small amount**" and it even proceeds to provide the example of the quranic verse 75:37. Most importantly, there is no signpost anywhere in *Lisan al-Arab* pointing to Hamza's invented definition ("a singular entity") or his invalid conclusions (a fluid containing a sperm cell or an ovum). As a reminder, Hamza claimed that "nutfah" does not refer to semen; the fluid everyone in antiquity believed to be the reproductive material. He states the following;⁴²

This perspective on the *nutfah* highlights how the intended use of this word is **not to** portray the meaning of semen but rather that it is a substance *from* semen. This supports

Hamza attempted to support this claim by inventing a definition and misrepresenting Arabic lexicons. He then erroneously claimed that "nutfah" means "a singular entity" and thus cannot refer to semen alone. This is in direct contrast to the actual definitions provided in *Lisan al-Arab*. Furthermore, the following two hadiths provide information that would be beneficial in shaping the description of the word "nutfah" as understood by the ancient Arabs.

Sahih Muslim. Book 18, Hadith 4291⁴³:

حَشَوْنَا جُرْبَنَا فَقَالَ نَبِيُّ اللَّهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ " فَهَلْ مِنْ وَضُوءٍ " . قَالَ
فَجَاءَ رَجُلٌ بِإِدَاوَةٍ لَهُ فِيهَا نُطْفَةٌ فَأَفَرَّ عَنْهَا فِي قَدَحٍ فَتَوَضَّأْنَا كُلُّنَا نَذْغُفُّهُ دَغْفُفَةً

Translation: ..The prophet of Allah “peace and blessings upon him” said: “Is there any water for performing ablution.” Then there came a man with a **small bucket** containing **nutfah**.

Jami at-Tirmidhi. Vol. 1, Book 1, Hadith 113⁴⁴:

وَأَحْمَدَ . وَقَالَ بَعْضُ أَهْلِ الْعِلْمِ مِنَ التَّابِعِينَ إِنَّمَا يَجِبُ عَلَيْهِ الْغُسْلُ إِذَا كَانَتْ
الْبِلَّةُ بِلَّةً نُطْفَةٍ . وَهُوَ قَوْلُ الشَّافِعِيِّ وَإِسْحَاقَ . وَإِذَا رَأَى اخْتِلَامًا وَلَمْ يَرَ بِلَّةً

Translation: “... Some of the scholars from the *Tabi’un* (2nd generation Muslims) said, “Only do *ghusl* if there is wetness of **nutfah**”

The first hadith is also the one being referred to in *Lisan-al-Arab*. Here “**nutfah**” is being used by the contemporaries of Muhammad to be referring to an amount of water that was needed for Muhammad to perform his ritual washing.

The second hadith is more important. However, it needs to be mentioned that this hadith is considered “weak” by the so-called *hadith sciences*. Regardless, this is irrelevant to this discussion as the above quote is not from the hadith but from its annotations provided by Al-Tirmidhi which nevertheless provide the ancient understanding of “**nutfah**”. This hadith refers to the ritual washing that needs to be performed if a person experiences a “wet dream”. The commentator states that some of the scholars are of the opinion that *ghusl* (ritual washing) should be performed if wetness is observed. What is important, however, is the fact that the commentators refer to the wetness as the wetness of the “**nutfah**” indicating irrefutably that this term did in fact refer to a visible amount of semen.

In the ultimate conclusion of this refutation point, Hamza’s hopes and desires for the word “**nutfah**” have been authoritatively destroyed. With a broader understanding of *Lisan al-Arab*’s definition of “**nutfah**”, it is clear that Hamza resorted to quote-mining the text, suppressing contradicting evidence as well as relying on faulty definitions that were erroneously inferred from trivial mistranslations. **For all practical purposes, the rest of Hamza’s arguments regarding “nutfah” have been refuted with the information provided in this single refutation point.** This is due to the fact that every other claim he made regarding “**nutfah**” ultimately relies on his initial claim that this Arabic word means or refers to something other than purely semen. With this claim exposed as an unjustified and an unjustifiable wishful thinking, every other claim crumbles as well. Nevertheless, this paper will continue to explore all of Hamza’s claims meticulously for the purpose of completion as well as to demonstrate the many examples of academic dishonesty that are abundant in his paper.

(2) Quote-mining & Misrepresentation of Hadith

After presenting his erroneous definition of “*nutfah*”, Hamza states the following on page 15 of version 2.1b;

According to Prophetic tradition, which can be found in *Sahih Muslim* in the *Book of Menstruation*, the Prophet Muhammad ﷺ explained the male and female reproductive substances mix.³⁹

For those not familiar with Hamza’s previous versions of his paper, this quote may appear out of place. This is because the claim made by Hamza in this quote is repeated again and in more detail on page 16 and thus the rightful placement of this quote would have been on page 16. On the page where the quote is currently found, Hamza abruptly moves on to another argument after mentioning this prematurely established claim.

The truth of the matter is that the purpose of this seemingly misplaced quote is to hide a rather blatantly dishonest incident in which Hamza was caught quote-mining. The account of Hamza’s quote-mining history with regards to this argument is discussed in the appendix (see appendix A *Hamza quote-mining Hadith in previous versions of his Paper*).

The new hadith quoted by Hamza is meant to replace the one he quote-mined from Musnad Ahmad in his earlier versions. Hamza gives the following reference for the new hadith; “**39 Sahih Muslim, 614.**” Quite ironically, **this hadith does not even contain the word “*nutfah*”.**⁴⁵

قَالَ جِئْتُ أَسْأَلُكَ عَنِ الْوَلَدِ قَالَ " مَاءُ الرَّجُلِ أَبْيَضُ وَمَاءُ الْمَرْأَةِ أَصْفَرُ فَإِذَا اجْتَمَعَا فَعَلَا مَنِ الرَّجُلِ مَنِ الْمَرْأَةِ أَذْكَرَا بِإِذْنِ اللَّهِ وَإِذَا عَلَا مَنِ الْمَرْأَةِ مَنِ الرَّجُلِ آتَانَا بِإِذْنِ اللَّهِ " . قَالَ الْيَهُودِيُّ لَقَدْ صَدَقْتَ وَإِنَّكَ لَنَبِيٌّ ثُمَّ انْصَرَفَ فَذَهَبَ

Translation: He then said: I have come to ask you about the child. He (the Holy Prophet) said: The *ma'a* (water/ fluid) of man is white and the *ma'a* (water/ fluid) of woman is yellow, and when they have sexual intercourse and the male's *maniyyun* (semen) prevails upon the female's *maniyyun* (semen), it is the male child that is created by Allah's Decree, and when the *maniyyun* (semen) of the female prevails upon the *maniyyun* (semen) of the male, a female child is formed by the Decree of Allah.

In fact, this hadith uses two of the other key terms, “*ma'a*” and “*maniyy*”. The major irony is that soon Hamza will be asserting that “*nutfah*” does not refer to “*maniyy*” or semen. Yet in the hadith provided by Hamza himself, the word “*nutfah*” does not even appear as Hamza implied in his paper. Instead, “*maniyy*” or semen is used and “*maniyy*” or semen is described by Muhammad as the parent’s ‘genetic material’ (as the people in 21st century would call it). This is factually incorrect;

especially by the standards Hamza is about to set. Quite shameful for his side is the fact the first two refutation points in this paper render every other argument from Hamza regarding “*nutfah*” as unsound.

(3) Repeating the Misrepresentations of “Nutfah” & Mistranslating the Exegesis

Hamza’s next argument is regarding the verse 75:37 from the Qur'an which states the following;

Sura 75:37: “Was he not a “*nutfah*” of/from semen (*maniyy*) ejaculated?”

Hamza’s aim here is to assert that “*nutfah*” does **not** mean semen (*maniyy*) and his reasoning is that the word “*nutfah*” appears separately from the word for semen (*maniyy*). The ultimate goal here is to establish that “*nutfah*” refers to a sperm or ovum (indirectly as of version 2.1b). Unfortunately for Hamza, this claim fails even before it can get a start. As already explained in refutation point (1), this very verse was listed in Lisan-al-Arab as an example of how the Arabs used “*nutfah*” to refer to semen (*maniyy*).

Lisan-al-Arab: “semen (*maniyy*) is called “*nutfah*” because of its small amount. And in the revelation (Qur'an): Was he not a “*nutfah*” of/from semen (*maniyy*) ejaculated?”

As discussed earlier, the accurate translation of this verse in the light of the information provided by the academic dictionaries is the following; “**Was he not a small amount (“*nutfah*”) of semen (“*maniyyin*”) ejaculated?**” Hamza tries to claim that “*nutfah*” does not mean semen yet this is contradicted by Lisan-al-Arab. Thus, Hamza’s argument has failed due to the fact that the very sources he used to make his claims ultimately refute them. Nonetheless, this paper will continue to examine the veracity of Hamza’s claims in this section.

After baselessly claiming that “*nutfah*” does not “portray the meaning of semen”, Hamza quotes one of the most respected exegetes in Islam history, a 14-th century scholar named Ibn Kathir, in an attempt to provide some much needed support for any of his claims. Hamza states that Ibn Kathir “clarifies that the *nutfah* is a substance from semen” and not semen itself. Hamza then provides the following translation of Ibn Kathir’s statements;

portray the meaning of semen but rather that it is a substance *from* semen. This supports the view that it is a single substance from a larger group of its kind. The classical exegete Ibn Kathir comments on this verse and clarifies that the *nutfah* is a substance from semen. He states:

meaning, was not man a weak drop of *nutfah* from a despised fluid known as semen.⁴¹

Yet in another predictable turn of events, Hamza has resorted to building his arguments upon trivial mistranslations, much similar to his mistranslation of *Lisan al-Arab* in refutation point (1). This paper will attempt to provide an accurate translation of the original text. Ibn Kathir states the following;⁴⁶

نطفة من منى يمنى؟ أي: أما كان الإنسان نطفة ضعيفة من ماء مهين يمنى: يراق من الأصلاب في الأرحام؟

Transliteration: Amma kana al-insana **nutfah dhaeefa** min ma'in maheen: yaraqu min al-aslaab fi al-arhaam.

Translation: "...was not man a **weak small amount** ("**nutfah**") of a despised fluid (ma'a) ejaculated: emitted from the backbones to the wombs"

Here are the meanings of some of the keywords used in the sentence.

- 1) **ضعيفة** (*dhaeefa*) – weak⁴⁷
- 2) **الأصلاب** (*al-aslaab*) – the backbones⁴⁸

The key difference between Hamza's translation and the provided accurate translation stems from the following two words, "**nutfah dhaeefa**." These two words merely mean "**a weak nutfah**." Hamza felt the need to insert the words "**drop of**" in his translation. However, it is still not clear what Hamza hoped to achieve with yet another one of his trivial mistranslations. Hamza seems to conclude from his mistranslated text of Ibn Kathir that, "the *nutfah* is a substance from semen" therefore "*nutfah*" is not semen. Yet Hamza gives no explanation as to why "*nutfah*" being a substance from semen would mean that "*nutfah*" is not semen. It is like saying a pizza slice is a substance from a pizza therefore a pizza slice is not pizza. The only difference here is regarding the quantity of semen or pizza which is of no relevance to any and all of Hamza's arguments.

Yet a Muslim apologist may wish to ask the following question; "**If "*nutfah*" is merely semen then why doesn't the Quran simply say that "*nutfah*" is emitted without mentioning "*maniyy*"?**" The answer is, **it does**; in verse 53:46.

Sura 53:46: "From a "*nutfah*" when it is emitted"

Thus, Hamza successfully and repeatedly demonstrates the fact that he is unable to support any of his claims without resorting to academically dishonest practices.

(4) Repeating the Misrepresentation of "sulalatin" (extract)

Hamza's next claim is regarding **verse 32:8** in the Qur'an which states the following,

Sura 32:8 "Then He made his posterity out of the (*sulalatin*) extract of a liquid (*ma'in*) disdained."

Hamza concludes that "*nutfah* is not just another synonym for semen" because the Qur'an said, "extract of a liquid disdained." Hamza bases this conclusion on his erroneous reasoning and misrepresentation of the Arabic term, "*sulalah*" which was discussed and refuted in the previous section dealing with, "extract of clay" (*Sulalatin min Tin*). In the light of the analysis of the word "*sulalah*" provided in the previous section, a phrase such as "extract of semen" would be referring to semen itself. Much like Hamza's claims regarding the phrase "extract of clay", Hamza has no evidence to suggest that "extract of semen" refers to some components within the fluid rather than the fluid itself.

Yet again, the Muslim apologist may wish to ask the following question; "**Why doesn't the Qur'an just say man is created from a despised fluid without using the word "extract"?**" The answer is, **it does**; in verse 77:20

Sura 77:20-21 "Did We not create you from a liquid (*ma'in*) disdained? And We placed it in a firm lodging (*qararin makeen*)"

Verse 77:21 also provides an insight into the weakness of Hamza's claim. Verse 77:21 refers to the "liquid (*ma'in*)" that is placed in a firm lodging (*qararin makeen*). The verse is analogous to verse 23:13 which refers to the "*nutfah*" that is placed in a firm lodging (*qararin makeen*). This further supports the view that "*nutfah*" refers to semen (or "liquid disdained") and consequently weakens Hamza's unjustified assertions.

In light of the counter-arguments presented against Hamza's reasoning in the previous section, (titled *extract of clay*) as well as verse 77:20-21, the only meaningful conclusion regarding the Qur'anic statement, "extract of a liquid disdained" is that it is in fact referring to semen and there is no evidence for Hamza's invalid conclusion that it does not refer to semen.

On a side note: If Hamza's argument (that the words "*nutfah*" and "*maniyy*" (semen) appearing separately implies that the two words cannot refer to the same substance) is considered valid, then shouldn't one conclude that the Islamic holy book states that the sun is not a star based on Quranic verse 7:54 which uses the words "sun" and "stars" separately

Verse 7:54: "...and [He created] the sun, the moon, and the stars..."

(5) Quote-mining the work of Ibn Rajab.

Hamza states the following regarding his claim about “*sulalatin*

The above view is supported by the Islamic scholarly tradition - which includes as Sa'id ibn Mansur, Ibn Abi Hatim and others - that maintain that there is something within the drop (*nutfah*) that is responsible for fertilisation and the genetic makeup of the embryo.⁴³

Hamza does not bother providing any direct quotes from these alleged scholars. Further disappointment rises from the fact that Hamza does not even bother properly referencing his claim; His reference merely states the following, “**See Ibn Rajab's Jami' al-'Ulum wal-Hikam.**”⁴⁹ No page number or publisher's information is given rendering it practically impossible for those less acquainted with the subject of Islamic scholarship to research or check Hamza's claims. One may even get the hint that Hamza does not wish anyone to check his source i.e the work of Ibn Rajab. Adding support to the notion that Hamza did not want anyone to read Ibn Rajab's work is the discovery of what Ibn Rajab has to say on the topic.

Ibn Rajab's book, titled *A collection of Knowledge & Wisdom*, is an exegesis of 50 hadiths or sayings of Muhammad.⁵⁰ One of the hadiths that is discussed in his book is one that is found in several hadith collections including Nawawi's 40 hadith,⁵¹ Riyad as-Saliheen,⁵² Sahih al Bukhari⁵³ and Sahih Muslim⁵⁴ and it states the following;

“The Messenger of Allah (peace and blessings of Allah be upon him), and he is the truthful, the believed, narrated to us, “Verily the creation of each one of you is brought together in his mother's womb for forty days in the form of a “*nutfah*” (a drop), then he becomes an “*alaqah*” (clot of blood) for a like period, then a “*mudghah*” (morsel of flesh) for a like period”

Quite clearly, Muhammad is stating blatantly erroneous ideas about reproduction. Whether “*nutfah*” meant sperm or semen, the notion of humans “**brought together in his mother's womb for forty days in the form of a *nutfah*”** is factually incorrect. Muhammad then continues with his factually incorrect ideas by saying that after *nutfah*, the embryo becomes an *alaqah* (clot of blood) for a similar period (40 days) and then a *mudghah* (lump of flesh) for a similar period (40 days). This has also been explained by Hamza's source, Ibn Rajab, in the following excerpt;

Thus, this hadith shows that in a period of one hundred and twenty days, the fetus is transformed through three different stages. In the first forty days it is a *nutfah* (drops of fluid), then in the next forty days it becomes an *alaqah* (something which hangs or clings; thick coagulated blood), and the next forty days a *mudghah* (a lump of flesh). After this period of one hundred and twenty days, the soul is breathed into it, and these four things are written for it.

The fact of the matter is that within 60 days or 9 weeks, embryo would have started to resemble a human infant.⁵⁵ Yet Muhammad would have everyone believe that at 9 weeks, the embryo is merely a blood clot

Ironically, it is Muhammad's words that ultimately refute Hamza's aspirations as demonstrated with this hadith. Nevertheless, it would be significant to verify what Ibn Rajab has to say regarding this hadith in his exegesis. The following is an excerpt from a translation of Ibn Rajab's *Jami al-Ulum wal-Hikam*;⁵⁶

"Verily each of you is brought together in his mother's womb for forty days in the form of a drop of fluid"

The explanation of this hadith was narrated by the Prophet (peace be upon him) in another hadith in which he said, "Verily, Allāh the Exalted, if He wills to create a slave, then the man has intercourse with the woman, and his water [semen] flows through all of the veins and parts in her, and on the seventh day, Allāh brings him forth in the [form] of all of his ancestors after Adam." Then he (the Prophet) recited,

﴿فِي أَيِّ صُورَةٍ مَّا شَاءَ رَكَّبَكَ﴾ [الانفطار ٨]

Ibn Rajab in his explanation of "*nutfah*" lists a Hadith in which Muhammad himself states that the man's semen "flows through all of the veins and parts" of the woman. Additionally, Ibn Rajab also quotes Ibn Masud, one of the most important scholars of Islam who was handpicked by Muhammad himself as one of the best teachers of his holy book.⁵⁷ The following is also an extract from Ibn Rajab's work,

﴿فِي أَيِّ صُورَةٍ مَّا شَاءَ رَكَّبَكَ﴾ [الانفطار ٨]

which means, **(In whatever form He willed, He put you together)** (Sûrat Al-Infiṭâr; 82:8)(¹)

Ibn Mas'ûd said, "If the drop of semen reaches the uterus, it rushes to all the hairs and nails where it remains for forty days. Then it recedes to the uterus where it becomes a clinging object." Then he said, "This is the way you were brought together."

Note: *Nutfah* is translated as "drop of semen" and *alaqah* is translated as "clinging object"

Here we see Ibn Masud conveying ideas that would be considered ludicrous by any modern standard. Hamza claims that ideas on embryology found in Islamic texts are accurate which is what one would expect if Muhammad was a prophet of God. Yet, contrary to Hamza's baseless conclusion, one finds material such as the Hadith and Ibn Masud's exegesis found in Ibn Rajab's work. Here is Muhammad claiming that semen will flow through the woman's veins and then one of Muhammad's closest companions and an early scholar of Islam states that "*nutfah*" will remain in the hair and the nails of a woman for forty days. With such evidence at

hand, it is only reasonable to realize that God had no part in Muhammad's knowledge.

(6) Further Misrepresentation of Exegesis and Incompetent Researching

Despite having failed to establish or justify any of his points, Hamza embarks on a new venture where in he tries to claim that “*nutfah*” can also mean or refer to the process of fertilization. As a reminder, all of his points depended on his assertion that “*nutfah*” referred to sperm or ovum (in a fluid drop as of version 2.1b) and **not** to pure semen. Since this assertion has been emphatically disproven in refutation point (1), every other argument from Hamza is wrong as well. Yet Hamza seems to show no signs of stopping his train of failed unjustified claims. In his new ride, Hamza plans to use the statements of Ibn Abbass, the cousin of Muhammad who is regarded as the first exegete of the Qur'an, to state that “*nutfah*” also refers to the process of fertilization or the formation of the zygote.

Hamza initially states the following,⁵⁸

The companion of the Prophet Muhammad ﷺ, and the quranic exegete, Ibn Abbas, mentions that the *nutfah* is:
from a weak drop of the water/fluid of man and woman.⁴⁴

As a reference Hamza provides the following, “**44 *Tanwir al-Miqbas min Tafsir Ibn Abbas*.**”⁵⁹ Much similar to his improper referencing to Ibn Rajab's work, Hamza does not even bother directing his reader to the verse for which this exegetical statement was taken from. That being said, an improper reference is the very least of Hamza's concerns. The awkwardness for Hamza is that his source, “***Tanwir al-Miqbas min Tafsir Ibn Abbas***” is not considered authentic by any scholar. In fact, the very introduction to “***Tanwir al-Miqbas min Tafsir Ibn Abbas***” states the following,⁶⁰

There is no doubt that this commentary is not the work of Ibn 'Abbas. The chain of transmitters of this commentary goes back to Muhammad Ibn Marwan > al-Kalbi > Abu Salih which is described by Hadith experts as the chain of lies (*silsilat al-kadhib*), for this line of transmission is utterly dubious and unreliable. One does not even need to use the criteria for reliable transmission applied by Hadith experts to decide this commentary's wrong attribution to Ibn 'Abbas. It is easy to detect obvious anomalies in the text of *Tanwir al-Miqbas* which leave one with no doubt that whoever wrote it lived many centuries after Ibn 'Abbas. One

If Hamza were a bit more competent in his research he would have noticed this. Nevertheless, it is still hypothetically possible that the statement attributed by Hamza to Ibn Abbass did originate from the early scholar of Islam. Regardless of the authenticity of *Tanwir al-Miqbas*, Hamza also provides statements of Ibn Abbas quoted by the respected 14th century exegete named Ibn Kathir. The following is an extract from Hamza's paper;

Ibn Kathir, while commenting on the 2nd verse in chapter 76 of the Qur'an, cites Ibn Abbas as describing the *nutfah* stage as the mixing of two fluids, therefore confirming the statement above:

This means the fluid of the man and the fluid of the woman when they meet and mix.⁴⁵

Interestingly, Hamza's only plan for suggesting the word "*nutfah*" refers to the process of fertilization is to describe "*nutfah*" as "the mixing of two fluids." Ignoring the fact that **neither sperm nor the ovum can be described as a fluid nor are they defined by "*nutfah*"**, there is a certain element of dishonesty in this relatively insignificant argument from Hamza. Consider the following,

What does Ibn Abbas *actually* say? The following is the complete quotation from the exegesis of Ibn Kathir;⁶¹

(Verily, We have created man from *Nutfah Amshaj*) meaning, mixed. The words *Mashaj* and *Mashij* mean something that is mixed together. Ibn 'Abbas said concerning Allah's statement, (from *Nutfah Amshaj*) "This means the fluid of the man and the fluid of the woman when they meet and mix." Then man changes after this from stage to stage, condition to condition and color to color. 'Ikrimah, Mujahid, Al-Hasan and Ar-Rabi' bin Anas all made statements similar to this. They said, "*Amshaj* is the mixing of the man's fluid with the woman's fluid." Concerning Allah's statement,

Ibn Abbas and others are not defining or explaining "*nutfah*" as the "mixing of two fluids" but rather they are saying the word "*amshaj*" means "mixed" and therefore "*nutfahtin Amshaj* is the mixing of the man's fluid with the woman's fluid."

For those still perplexed by what has occurred, here is another attempt at clarification. Hamza's entire goal through out this section has been to elevate a simple term called "*nutfah*" to a *super-word*. This is one such attempt. Verse 76:2 in the Qur'an contains the words "*nutfahtin amshajin*". The words "*amshajin*" means a mixture(s)⁶² and thus "*nutfahtin amshajin*" means a mixture of "*nutfah*" which in the context of the sentence could very well be referring to the mixing of male and female fluids. Yet the unsatisfied Hamza wanted the definition of "*amshaj*" to be assigned to "*nutfah*" as well; thus he moved on to quote-mine Ibn Kathir's exegesis and to conclude (**without good evidence**) that "the *nutfah* stage is the mixing of two fluids".

On the other hand, the above point is perhaps too critical of Hamza's words. It is possible that Hamza is not attempting to **define** "*nutfah*" as the "mixing" but rather he is attempting to create an embryonic "stage" named "*nutfah*" where the mixing occurs, making use of the word *amshaj* in 76:2.

In any case, Hamza's argument here is terribly unimportant and unexciting. Even if one were to assume that Hamza's conclusion here is right, it would still be

horribly unimpressive. People have believed for a very long time that reproduction involves the mixing of fluids of both genders. Thus, it would be of no surprise if a language such as Arabic had a word for this mixture. Therefore, even after failing to justify his claims, Hamza statements are mundanely trivial and hence negligible even if they were justified.

Nonetheless, having delivered an unbelievably poor case for his conclusion that “*nutfah*” refers to the process of fertilization; Hamza then proceeds to give yet another bad argument for his assertion that “*nutfah*” does not mean semen. His argument is as follows;

Ibn Abbas' above explanations seem to allude to the fact that the *nutfah* is just a fluid. Therefore, some commentators assert that this illustrates that the word *nutfah* is a synonym for the word semen. This assertion lacks a holistic understanding and it fails to take into account the other quranic verses and the Prophetic traditions referring to the *nutfah*. In the Prophetic traditions, when describing semen in context of its appearance and form, the words *mani* and *maniyyan* are used. This is consistent throughout various

...

washed *maniyyan* from the Prophet's ﷺ garments.⁴⁶ If the whole corpus of exegetical material is used to form an accurate perspective on the word *nutfah*, Ibn Abbas' statement should be taken in the context of the *nutfah* being a specific drop of fluid from the semen and not the semen itself. This is because the Prophetic traditions use the words *mani* and *nutfah* in different contexts, and therefore clearly differentiate between the two terms, further highlighting that they are not synonyms. Additionally, the quranic verses pertaining to the word *nutfah* clearly mention that the *nutfah* is an extract from semen, and not semen itself.

In other words, his argument is that there are hadith in which semen is referred to by the Arabic word, “*maniyy*” from which one can conclude that “*nutfah*” does not refer to “*maniyy*” or semen. This is analogous to saying, because a person said, “I love my dog” at one instance and at another time said “I love my pet” that it can be concluded that the “pet” does not refer to that person's dog.

Furthermore, refutation point (1) demonstrates, with the support of *Lisan al-Arab* and hadith, that “*nutfah*” does refer to a visible amount of water or semen. Thus, a “holistic understanding” of the sources, reveals that Hamza is wrong. His final claim that the Qur'anic verses “clearly mention that the *nutfah* is an extract from semen, and not semen itself” has been addressed and refuted in refutation point (4).

In summary, the statements from Ibn Abbas do not provide any support for Hamza's claims. This refutation point demonstrates the incompetence of Hamza's researching skills as well as his extremely weak ability for logical reasoning.

(7) A Bad Argument based on Grammar

After his claim regarding the statements of Ibn Abbas, Hamza then states that verse 76:2 from the Qur'an supports the claim of “*nutfah*” being a zygote due to the “grammar” of the sentence. Hamza states the following,

In addition to the above, the Qur'an mentions another meaning for the word *nutfah* by describing it as a combination of mingled (*al-amshaj*) substances: "We created man from a drop (*nutfah*) of mingled fluid."⁴⁷

This is the same verse that was used in the previous point where in Hamza duplicitously presented this verse and its quote-mined exegesis and attempted to conflate the definition of "*amshaj*" with the definition of "*nutfah*" in order to establish his assertion that "*nutfah*" refers to the process of fertilization.

Sura 76:2 "Indeed, We created man from *nutfatin* mixture (*amshajin*)"

In this point, however, Hamza is quite keen on leaving the definition of "*amshaj*" where it belongs. This is due to the fact that Hamza is about to claim that "*nutfah*" refers to zygote as well. His new plan is to suggest that the grammar of the verse indicates that "*nutfah*" can mean "a single entity or drop produced by a combination of substances coming from the mother and the father. He states the following,

This verse, from a grammatical perspective, portrays an image of the *nutfah* as an entity made up of a combination of substances. The word *al-amshaj* (mingled) is a plural adjective and it is used here with the singular noun *nutfah*. Grammatically, this highlights the verse's concept of the *nutfah* as being a single entity or drop produced by a combination of substances coming from the mother and the father.

Hamza's argument seems to be that Sura 76:2 has the words "*nutfahtin amshaj*" and "*nutfah*" is a singular noun while "*amshaj*" (meaning mixtures) is a plural adjective. From this, Hamza concludes that "*nutfah*" is a single entity formed from the mixture(s) (*amshaj*) of "substances coming from the mother and the father.

Hamza's argument ties back to his initial attempt to associate the word "**single**" to the word "*nutfah*" which was discussed and subsequently foiled in refutation point (1). Here is yet another attempt to make the same association. While he had to forge the association in the first refutation point, he seems to have finally found a legitimate one. "*Nutfah*" is a **singular term** and there in is its association of the word with the term "**single**". Yet in his very predictable manner, Hamza follows this with another invalid argument. His claim is that because "*nutfah*" is a singular term, one can conclude the meaning of "*nutfah*" as a "single entity" as demonstrated by his statement, "**grammatically, this highlights the verse's concept of the *nutfah* as being a single entity.**" This is a jaw-dropping display of bad logic. Hamza argument is a hundred percent analogous to the following argument; the word "amount" is singular therefore the meaning of "amount" is "a singular entity".

Of all the arguments given by Hamza for his unrealistic vision of the word "*nutfah*", this would have to be the worst one. With Hamza's logic, a phrase such as "amount of money" could only refer to one penny or one dollar. Since this is nonsensical, Hamza is clearly using fallacious reasoning.

(8) Baseless Conclusions

After delivering all his arguments, Hamza ultimately concludes the following;⁶³

In light of this analysis, the word *nutfah* can mean a drop of fluid from the male and female that are extracts from a larger volume or group of its kind. It can also mean a single entity produce by a combination of drops from the semen and the female equivalent, which contain essential extracts or substances like a sperm (spermatozoon) or an egg (oocyte).

Note: Hamza incorrectly refers to the ovum as an oocyte (which is a precursor to the ovum).

In light of the analysis of all of Hamza's arguments provided in this paper, one can only conclude that his conclusions are crooked, his logic is ludicrous and his integrity is imaginary.

(9) Suppression and Misrepresentation of Conflicting Evidences

Hamza Tzortzis states the following regarding the critics of the Qur'an,

Therefore, some commentators assert that this illustrates that the word *nutfah* is a synonym for the word semen. This assertion lacks a holistic understanding and it fails to take into account the other quranic verses and the Prophetic traditions referring to the *nutfah*. In the Prophetic traditions, when describing semen in context of its appearance

One can only wonder as to why Hamza does not listen to his own words as his paper is an epitome of the kind of research that "lacks a holistic understanding" of the relevant subject material. Many instances of quote-mining by Hamza have already been demonstrated in this section. Here are a few other instances of misrepresentation or suppression of evidences from Islamic texts that contradict Hamza's arguments for the term "*nutfah*".

(a) Sura 86:6-7 – Origin of semen between Backbone and Ribs

Sura 86 verses 6 to 7 from the Qur'an are very popular among the critics of Islam. Especially for those oriented with a scientific mindset, these verses would count as a factual error in the "holy text" of Quran. The verses state the following,

خُلِقَ مِنْ مَّاءٍ دَافِقٍ (٦) يَخْرُجُ مِنْ بَيْنِ الصُّلْبِ وَالتَّرَائِبِ (٧)

Transliteration: Khuliqa min *ma'in* dhafiqin yakhruju
min bayni al-sulbi wa al-taraib

Translation: "He was created from a fluid (*ma'in*), ejected,
Emerging from between the backbone and the ribs."

At first sight, the verse seems to suggest that the substance from which humans are created originates from the backbone. This was also a commonly held view during ancient times as it can be observed in the teaching of Hippocrates who

described the origin of semen in the brain which subsequently descends through “the spine to the sex organs”;⁶⁴

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Hippocrates believed that conception took place in the cavity of the uterus, by the mixture of due proportions of the male and female semen; and in each was equally contained the organic principles of the embryo. According to Hippocrates, the semen of the male is furnished by all parts of the body; and, during coition, it meets with a similar fluid furnished by the female. Hippocrates believed that the main seat of production of the semen was the brain, from which it descended down the spine to the sex organs.

Due to the fact that this has been a very common criticism of the veracity of the Qur'an, Hamza Tzortzis does address this contention in his paper. The following is his response,⁶⁵

The word **السُّلْبِ** (*sulb*) carries various meanings including hard, firm, solid, stiff and rigid. It also means any portion of the backbone, particularly the lumbar portion and the loins. It is specific to males.^{184 185} The word **الْتَرَائِبِ** (*tara'ib*) means breastbone, the ribs¹⁸⁶ or the pelvic arch¹⁸⁷ and this word according to most authors refers specifically to women.

With such examinations of the interpretations offered by the Arabic language, it can be inferred that the Qur'an complies with modern physiology as it is well known that the sperm and semen come from an area referred to as the loins, and the ovum comes from the pelvic arch area. Both of which are required for the creation of man, that is to say, the human being.

While there is a nugget of truth in Hamza's rebuttal, he seems to have missed the larger picture of the criticism, all the while engaging in his usual academically dishonest tactics. The two keywords that need examination are “*sulb*” (translated as backbone) and “*tara'ib*” (translated as ribs). Beginning with “*sulb*”, Hamza's defense of this word seems to be that it can also mean “the loins” and that “it is well known that the sperm and semen come from an area referred to as the loins.” There was no surprise in realizing that this too is an absurd assertion.

a.1) Misrepresenting the Meaning of “*sulb*”

Perhaps Hamza ought to have performed a *lexical analysis* on the word in question. Here are the relevant meanings given for “*sulb*” in Lane's lexicon;⁶⁶

<p>سُلْبٌ Hard, firm, rigid, stiff, tough, strong, robust, sturdy, or hardy; syn. شَدِيدٌ; (S, A, cited, (TA,) The back-bone; i. e. the bone extending from the كَاھِلٌ [or base of the neck] to the</p>	<p>عُجْبٌ [or rump bone]; (M, A, K;) the bone upon which the neck is set, extending to the root of the tail [in a beast], and in a man to the عَصَصٌ [or os coccygis]: (Zj) in his “<i>Khalk el-Insán:</i>”) or a portion of the back: (S:) and any portion of the back containing <i>vertebræ</i>: (S, Mgh, TA:) [and particularly the lumbar portion; the loins:]</p>
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The most accurate definition of this term is that of the backbone. However, does Hamza's defense using the meaning of "loins" solve the problem for the Qur'an? Certainly not! What Hamza fails to realize or willfully ignores is that "the loins" as "a euphemism for genitalia or sex organs" is the product of the English language and Hamza provides no evidence to suggest that the same euphemism was maintained among the ancient Arabs. In contrast, the **primary** definition of "loins" is also provided in the lexicon as "**the lumbar portion**". This can also be verified using the *Oxford English Dictionary*;⁶⁷

loin, n.

1.


a. In the living body. Chiefly *pl.* The part or parts of a human being or quadruped, situated on both sides of the vertebral column, **between the false ribs and the hip-bone.**

The **secondary**, euphemistic meaning of loins, related to the private parts, is also explained in *OED* as well as the *Online Etymology Dictionary*⁶⁸ as follows. (Note: the year of origin of this euphemism);

2. Chiefly *Biblical* and *poet.* This part of the body, regarded:

a. as the part of the body that should be covered by clothing and about which the clothes are bound; so, **to gird (up) the loins** (lit. and fig.), to prepare for strenuous exertion.

1526 *Bible* (Tyndale) Matt. iii. 4 This Jhon had his garment off camels heer and a gerdell off a skynne aboute his loynes.

loin 

early 14c., "side of the body of an animal used for food," from O.Fr. *loigne* "hip, haunch, lumbar region," from V.L. **lumbea*, from **lumbea caro* "meat of the loin," from fem. of **lumbeus*, adjective used as a noun, from L. *lumbus* "loin" (see **lumbago**). Replaced O.E. *lendenu* "loins," from P.Gmc. **landwin-* (cf. Ger. *Lende* "loin," *Lenden* "loins;" O.H.G. *lenti*, O.S. *lendin*, M.Du. *lendine*, Du. *lende*, O.N. *lend*). The Latin word perhaps was borrowed from a Germanic source. In reference to the living human body, it is attested from late 14c. **In Biblical translations**, often used for "that part of the body that should be covered and about which the clothes are bound" (1520s). Related: *Loins*.

This euphemistic definition is explained as a secondary "biblical and poetic" metaphor for one's private parts and one that **originated only in the early 16th century**. Thus, it is unreasonable for Hamza to assign a definition, which specifically arose in 16th century English, to an Arabic word used in the 7th century. Interestingly, Lane's lexicon also provides an account for another metaphorical idea associated with "*sulb*" among the Arabs;

a contraction of *صَلْبَة*. (TA.) Lh mentions, as a phrase of the Arabs, *هؤلاء أبناء صلبهم* [These are the sons of their loins; because the sperma of the man is held to proceed from the *صَلْب* of the man, as is said in the Ksh &c. in lxxxvi. 7]. (M. [See also a similar phrase in the Kur iv. 27.]) —

The lexicon explains the metaphorical idea expressed in the sayings of the Arabs; the origin of which was due to the belief that “**the sperma of the man is held to proceed from the “sulb”** (i.e. backbone) **of the man**” and then proceeds to cite the contested verse, 86:7 as an example.

The take home point for Hamza or any other apologist is that there is no evidence to suggest that the 16th century English euphemistic meaning of the word “loins” applies to the Arabic “sulb”. An analogy of Hamza’s claim is that of a person looking up the definition of the Arabic term “sa’eed (سعيد)” in a dictionary and finding its meaning as “happy, gay” etc. However, the person then incompetently concludes that the Arabic word “sa’eed (سعيد)” means “homosexual” due to the double meaning of the word “gay” in English. Hamza’s defense is equally ludicrous.

Thus, the realistic and rational definition of “sulb” in the context of the verse 86:7 is certainly that of the “backbone”.

a.2) Distorting the meaning of “taraib”

The next keyword in sura 86:7 that needs examination is “*tara’ib*” which has been translated as “ribs”. Hamza’s defense for this word is yet again incompetent and deceitful. Hamza states the following,

specific to males.^{184 185} The word *الترايب* (*tara’ib*) means breastbone, the ribs¹⁸⁶ or the pelvic arch,¹⁸⁷ and this word according to most authors refers specifically to women.

Hamza’s plan of action is to suggest that “*tara’ib*” can also mean “the pelvic arch” from which “the ovum comes”. Hamza gives the following source for the meaning of “*tara’ib*” as “the pelvic arch”,⁶⁹

¹⁸⁷ Taj Al Arus Min Jawahir Al Qamus, or refer to Muhammad Asad’s footnote in his translation of the Qur’an, which can be found here <http://arthursclassiconovels.com/koran/koran-asad10.html>, retrieved 5 September 2011, 15:31.

Taj Al Arus is a 19th century lexicon of Classical Arabic similar to *Lisan al-Arab*. However rather than providing a direct and proper reference from Taj al-

Arus, Hamza points to a footnote of an English translation of the Qur'an authored by a 20th century translator named Muhammad Asad. From the reference given the reader is supposed to understand that Muhammad Asad found the definition of “pelvic arch” in Taj al-Arus.

Now to ask the important question, **is Hamza being dishonest again?** The answer may not surprise you as it is a “big fat Yes”. The following is the footnote from Muhammad Asad’s translation,⁷⁰

3 The plural noun tara'ib, rendered by me as "pelvic arch", has also the meaning of "ribs" or "arch of bones"; according to most of the authorities who have specialized in the etymology of rare Quranic expressions this term relates specifically to female anatomy (Taj al-'Arus).

Muhammad Asad, who is certainly a more honest man than Hamza, openly admits that his translation of “pelvic arch” is **his own rendering**. Asad proceeds to mention the meanings of “tara'ib” as “ribs” and “arch of bones” (very likely referring to rib arches). The reference from Taj al-Arus is given regarding his statement that “tara'ib” refers “to female anatomy” and **not** to the invented definition of the “pelvic arch” as Hamza would have his readers believe.

Secondly, the assertion that Taj al-Arus defines “tara'ib” as the “pelvic arch” is weakened by Lane’s lexicon which heavily utilizes Taj al-Arus (abbreviated as TA) in its content. The following is the entry for “tara'ib” in Lane’s lexicon;⁷¹

تَرْيِبَةٌ, (S, M, TA,) or تَرْيِبٌ, (TA,) sing. of تَرَائِبُ, (S, M, TA,) which signifies *The part of the breast which is the place of the collar, or necklace*: (T, M, K:) so by the common consent of the lexicologists: (T:) or *the bones of the breast*: (M, A, K:) or *the bones of the breast that are between the collar-bone and the pap*: (S:) or *the part of the breast, or chest, that is next to the two collar-bones*: or *the part that is between the two breasts and the collar-bones*: or *four ribs of the right side of the chest and four of the left thereof*: (M, K:) or *the two arms and two legs and two eyes*: (T, M, K:) it is also said that the تَرْيِبَتَانِ are the two ribs that are next to the two collar-bones: I Ath says that the تَرْيِبَةُ is the uppermost part of the human breast, beneath the chin; and its pl. is as above: accord. to IF, in the Mj, the تَرْيِبُ is the breast, or chest: MF says that تَرَائِبُ relates to males and females in common; but most of the authors on strange words affirm decidedly that it is peculiar to women: (TA:) the تَرْيِبَةُ of the camel is the part in which it is stabbed, or stuck; syn. مَنَحَرٌ. (M.)

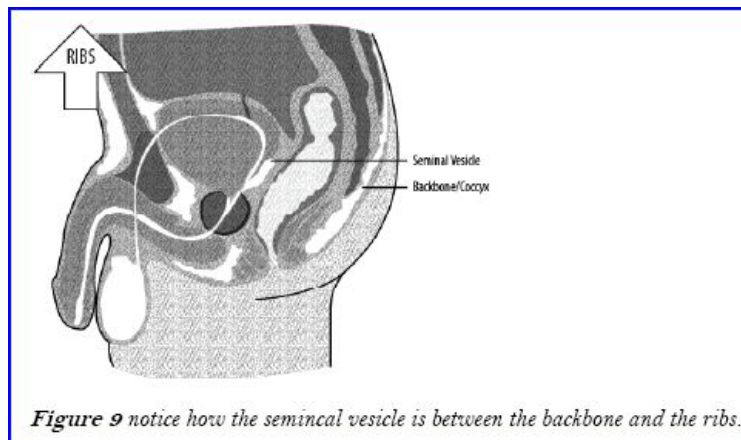
Lane’s lexicon does not mention the meaning of “the pelvic arch”. Besides what is the purpose of language if two distinct terms in a related field are referred to by the same word. For an analogy, imagine a word such as HamDay which is defined by certain enthusiasts as both “Monday” and “Friday”. What purpose is there for such a word other than to cause confusion? A sentence such as, “My birthday is this Hamday” would always require further clarification and thus would be nonsensical to assume such a word would even exist. Likewise, a word defined as two distinct anatomical parts is nonsensical. Therefore, apart from the fact that Hamza has no evidence for his claim regarding pelvic arches, it would also be unreasonable to think that “taraib” would have such a meaning.

With this data in mind, the most sensible understanding of “*taraib*” would be of “ribs” or “breastbone” etc.

Having displayed a lack of *lexical analysis* skills with “*sulb*” and a lack of academic integrity with “*taraib*”, Hamza delivers yet another mind-bogglingly bad argument in order to vindicate his holy book. Here Hamza begins to assert that even if “*sulb*” and “*taraib*” were translated as “backbone” and “ribs” respectively, the Qur'an would not be in error. Hamza states the following,

Even if the above analysis is dismissed, the verse in question would still be scientifically accurate. Modern physiology states that semen is made up various fluids. For instance, semen is made up of sperm which comes from the testes and makes up 2-5% its content. Fluid from the seminal vesicles make up 65-75% of semen, and fluid from the prostate makes up 25-30% of the male sexual fluid. Also, semen is made up of fluid from the bulbourethral glands which makes up less than 1% of the semen. According to modern physiology the main source of the semen is the fluid from the seminal vesicles and these vesicles are situated between the lower backbone and the ribs [see figure 9]:

Hamza also presents the following cartoon-ish “smirk-provoking” diagram, for which no reference was given,



Before analyzing Hamza’s claim, a factual error in his paragraph needs to be addressed. He stated that “semen is made up of sperm”. This is not an accurate representation of the relationship between semen and sperm. Semen should be considered as a vehicle that carries a distinct substance called sperm. Every credible biologist understands and explains semen and sperm as two distinct substances. That being corrected, what is Hamza’s argument here?

His argument attempts to show that semen is mostly produced in the seminal vesicle which, according to Hamza, is between the backbone and the ribs. While the cartoon-ish-image seems exaggerated, Hamza has finally delivered a statement that is not “technically” inaccurate. If one were to generously allow the meaning of “*sulb*” to extend the tip of the coccygeal bone, then Hamza’s statement would be “technically” accurate since the seminal vesicle is, more or less, in the adjacent area.

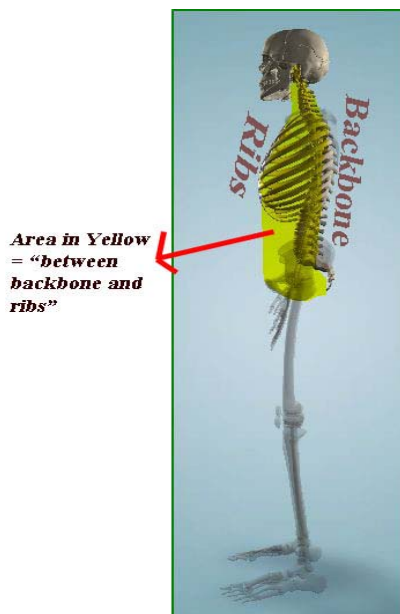
That being said, Hamza has bought “accuracy” for this verse at the price of maximum ambiguity.

a.3) Maximum ambiguity

This difficulty is a rather a discreet and nuanced one that would require considering the broader applications of Hamza’s reasoning. Ignoring whether the “fluid” (*ma’in*) mentioned in sura 86:6-7 is sperm (in a fluid as of version 2.1b) or semen, Hamza would still have to answer the consequences of the logical extension of his explanation for the alleged error in the verse.

What was Hamza’s alternative explanation for the alleged error in the verse if his pelvic arch and loin defenses were rejected? He stated that the semen is produced in the seminal vesicle which, according to Hamza, is between the “ribs” and the “backbone”. Of course, for this to be true, it is necessary to define the backbone as extending to coccyx (or tail bone) where the seminal vesicle is found in the nearby area. Yet if one is allowed to extend the definition of backbone to reach its very bottom, one could also define it to reach the very top i.e. the vertebrae extending into the skull. Similarly, the ribs can be defined as extending from the very top pair to the very bottom pair.

What is the consequence of this? It ultimately allows one to interpret the following words in Sura 86:6-7, “between the backbone and the ribs” as referring to the area encompassing **the entire viscera of the human body**. Below is a graphical representation of this point.⁷²



Given the important placed on semantics in Islamic apologetics, an apologist could also make the claim that the area “between backbone and ribs” can include the brain as well as the testicles the same way one can think of one’s head as situated *between* the two shoulders. However, what are the consequences of such reasoning? Would Islamic apologists be able to accurately claim that their verse (86:6-7) is factually correct? **The answer is “technically” yes.** However, the apologists would be buying the security of their “technical” accuracy at a price far more damaging to the veracity of their holy book. This is because of the principle of ‘maximum ambiguity’.

What is maximum ambiguity? Bertrand Russell, the celebrated philosopher and historian, once said, **“I propose to prove that all language is vague, and that therefore my language is vague.”**⁷³ Ambiguity of a sentence or a paragraph or an essay or a book maybe described mathematically as the amount of “vagueness” expressed in the language. The principle of maximum ambiguity states that if the language used in a statement allows for every practically possible

interpretation to be accurate, then the language used is maximally ambiguous. This is to say that the language has attained the greatest possible level of ambiguity i.e. it would be impossible for anyone to make it more ambiguous and unspecific. The following is a concrete example involving mathematics. Imagine a student named Hamzter taking a math test in his class. He glances over the first question which is as follows,

Math Test

Name: Hamzter

Class: IERA

Question 1

Prophet Muhammad (peace and blessings upon him) stated in Sahih Bukhari (Vol. 4, Book 55, Hadith 567) and Sahih Muslim (Book 1, Hadith 430) that out of every 1000 people, 999 are destined to hell. If there are 7 billion human beings, how many will go to hell?

The correct answer to this question is that out of 7 billion people, six billion, nine hundred and ninety-three million will burn in hell according to Prophet Muhammad (peace and blessings upon him and the 0.1% elite heaven-dwellers).

However is this, the only correct answer that could have been given to this question? What if Hamzter answered by saying, “it is a very big number”? This would be “technically” correct as well. What if Hamzter answered it is “a number between 0 and 7 billion”? This would also be “technically” correct.

What if Hamzter answered every question on the test with the following words, “**some number**”? Would Hamzter have given a correct answer to all the questions? **Yes**. Is there any reasonable teacher who would give this student an A+ on this test? **Absolutely not!** Along with accuracy, it is also important to have “precision”. Hence the teacher would grade the test with a 0 due to the absence of precision which is just as important as accuracy.

How does this relate to sura 86:6-7? If one were to logically extend Hamza’s reasoning in his defense of the verse’s veracity, the words “between the backbone and ribs” would necessarily encompass the entire human viscera including the brain and the testicles. If Hamza’s reasoning is considered valid then the Qur’an’s verse is a maximally ambiguous statement due to the fact that the Qur’an would be effectively saying that “the part of the body that produces semen is located in the body.” This statement would encompass every logically possible answer to the question of semen or sperm production. Consequently, that quranic verse would also be graded with a zero for the absolute lack of precision.

(b) **Hadith regarding gender determination**

After displaying his poor attempt at salvaging the Qur'an from its own blatant errors, Hamza moves on to defending the errors found in the Hadith collections. He begins with a particularly problematic hadith regarding gender determination. However, Hamza does not even mention the problem with this hadith as he indifferently presents it as if it were scientifically accurate. Hamza states the following;

The following tradition on gender determination highlights how the Prophetic traditions are in line with scientific developments:

The angel is sent to the *nutfah* after it has settled in the uterus for 40 or 45 nights and says, "Lord! Is it to be wretched or happy?" Then this is inscribed. Then he says, "Lord! Is it to be male or female?"¹⁸⁸

The quoted hadith is **Sahih Muslim Book 33, Hadith 6392**. The problem with the hadith should be apparent. The hadith states that at the 40th or 45th day (not certain why God is unable to fix a specific day?), an angel is sent to the "*nutfah*" (is the embryo still a *nutfah* at day 40 or 45?) and it then proceeds to ask God whether the embryo will be a male or female suggesting that gender determination occurs during the 40th or the 45th day.

Surprisingly, Hamza thinks this is accurate i.e. he thinks gender determination occurs during the 40th or the 45th day. One only needs a basic knowledge of biology to understand that gender determination occurs at conception.

For a brief review, there are 23 pairs of chromosomes in a human cell. One of these pairs is called sex chromosomes and there are two kinds; X chromosome and Y chromosome. A female has XX i.e. the pair consists of two X chromosomes. On the other hand, a male has XY i.e. the pair consists on one X chromosome and one Y chromosome.

The sperm and ovum are haploid cells i.e. they only contain one copy of the DNA unlike the normal diploid cells that carry them in pairs. Sperm and Ovum are created through a process called meiosis where a diploid cell divides itself to produce haploid gametes (sperm and ovum). Thus, in a female, an XX cell will produce an X-ovum where as in males, an XY cell will produce both X-sperm and Y-sperm.

During conception, if the ovum (always has an X chromosome) is fertilized by an X-sperm, then the zygote will be an XX cell and will develop into a female. On the other hand, if the ovum is fertilized by an Y-sperm, then the zygote will be an XY cell and will develop into a male. The only exceptions are in the case of genetic disorders related to the sex chromosomes which may result from mutations or errors during cell division. For example, in Klinefelter's syndrome, the sperm due to errors in cell division, contains both X & Y chromosome which upon fertilizing the ovum

produces a cell with three copies of the sex chromosomes; “XXY”. This result in human beings with the appearance of males who may suffer from sexual ambiguities or other issues related to reproductive health.

Nevertheless, the fact of the matter is that the gender of the individual is determined during conception. The gender depends on the nature of the gametes i.e. the nature of the sex chromosomes in the gametes. As the Biologist Ethel Sloane explains,⁷⁴

“If a sperm bearing an X chromosome fertilizes an egg, the resulting XX zygote (or fertilized egg) will be a female. If a Y-carrying sperm fertilizes an egg, the XY zygote will develop into a male...The male and his sperm solely determine the sex of the offspring.”

Now the question is, how exactly can Hamza prove that this well known fact is false? How can Hamza prove that gender determination occurs during the 40th or 45th day? The answer is that he doesn’t. He makes an attempt and fails due to lack of understanding of the topic at large. His explanation for his claim is as follows,

During the 6th week of the developing embryo the primary sex cords are finger like projections. At this time both the male and female gonads appear identical. However, just after the 6th week a significant event occurs that determines the physical expression of the embryo’s genetic makeup. This event is the activation of genes that stimulates the production of male and female hormones:

If the Y chromosome is present in the embryo’s cell, a gene within the short arm of the chromosome called SRY will turn on, initiating a chemical chain reaction that will turn on other genes and stimulate the production of male hormones. If the X chromosome is present, or if the SRY gene is missing from the Y chromosome, the embryo will develop into a female via mechanisms that are not fully understood.¹⁸⁹

Hamza provides an explanation containing much technical information regarding genetic expression of the reproductive system that may seem convincing to an uneducated lay person. However, Hamza’s explanation does not prove that gender determination occurs at the 40th or 45th day and his claim that it does is merely fallacious.

Here is an analogy that explains the situation. Suppose a poet made the following statement, “The Taj Mahal began in 1640 or 1645.” This statement was later shown to be erroneous as the Taj Mahal began its construction in 1631 or 1632 and was completed in 1648.

Then a certain enthusiastic follower of the poet, named Hamzter, states that this statement is not in error. He then provides a quote from a historian such as Lesley DuTemple who said the following in her book titled, *The Taj Mahal*;⁷⁵

“All this construction and embellishment cost money, lots of it. From 1632 through **1640**, the expense to the Mughal treasury was staggering.”

From this quote Hamzter claims that the poet was factually correct in stating that “the Taj Mahal began in 1640 or 1645”. Would this seem reasonable to anyone? **Certainly not!** Hamzter is not providing any evidence that the building began its construction in 1640 or 1645 but instead he merely points out that the construction was still undergoing in 1640.

A similar fallacious reasoning is provided by Hamza as well in his defense of Muhammad’s erroneous statements. There is no doubt in the fact that gender determination occurs at conception. Yet Hamza merely points to certain physiological events related to sexual development that occurs during the 6th week and from this he fallaciously claims that gender determination occurs in the 6th week. Much like the case with Hamzter, Hamza’s argument is invalid as well.

Moreover, this poses a certain difficulty for Islamic theology. Consider, that if one had the technology to map the genome of the zygote (at conception), one could scientifically determine the gender of the potential human being. Consider that point again; one would be able to know the gender of the human being **before** Allah has revealed it to his angels. Interestingly, in some hadith, Muhammad states that “nobody knows what is in the womb” except Allah.⁷⁶ It seems Allah underestimates the progress of Human knowledge and technology.

On a side note: If Angels (awaiting the commands of Allah) are assigned at every womb (stated in Bukhari Book 55, Hadith 550⁷⁷) and is directly responsible for shaping the embryo and assigning its gender (as stated in Muslim Book 33, Hadith 6393) **then whence cometh** genetic disorders resulting from mutations and cell division errors?

(c) **Hadiths referring to the time period of “*Nutfah*”**

Even though the incompetence observed in Hamza’s defense of the error in sura 86:6-7 is at the very least forgivable; there is no redemption for the tragedy that is about to befall him. As a reminder, Hamza made the unjustified accusation that the critics of Islam lacked “**a holistic understanding**” and failed to “**take into account the other quranic verse and the Prophetic traditions referring to the *nutfah*.**”

Hamza tries to misrepresent yet another problematic piece of text, this time a hadith found in the collections of Sahih Bukhari and Sahih Muslim. The following is extracted from page 66 of version 2.1b,⁷⁸

DO THE QURANIC STAGES LAST 40 DAYS EACH?

However, there is a particular tradition that critics have claimed to be scientifically inaccurate. The following tradition has been interpreted to mean that the *nutfah*, *‘alaqah* and *mudghah* stages occur in three 40 day sequences, making it a period of 120 days. This interpretation does not concur with the appearance of the embryo during this time:

The Messenger of Allah, the true and truly inspired said, “(The matter of the Creation of) a human being is put together in the womb of the mother in forty days, and then he becomes a clot of thick blood for a similar period, and then a piece of flesh for a similar period.”¹⁹⁰

The hadith mentioned is **Sahih Bukhari Vol. 4, Book 54, Hadith 430**⁷⁹ and it says that a human being is put together in the womb for forty days, then it becomes a blood clot (“*alaqah*”) for a similar period, then a lump of flesh (“*mudghahh*”) for a similar period. This hadith quite clearly states that the embryo will merely be a blood clot from day 40 to 80 and then a lump of flesh from day 80 to 120. This could not be farther from reality. As stated before, the embryo begins to strongly resemble an infant around the 9th week or 60 days.⁸⁰

However, Hamza proposes a solution for the clearly erroneous hadith. He provides a second hadith⁸¹ that mentions the number 42 which, according to Hamza, proves that the correct understanding of the first hadith “would be that the 40 days are parallel” i.e. “the *nutfah*, *alaqah* and *mudghahh* stages occur during the same 40 day period. He states the following;⁸²

To clarify this seemingly inaccurate tradition, a correct interpretation would be that the 40 days are parallel, meaning that the stages occur within a 40 day period. This is supported by another Prophetic tradition which mentions that the creation of specific differentiated organs start after the first 42 days:

When 42 nights have passed...God sends an angel to it, who shapes it.¹⁹¹

This tradition clearly indicates that the *nutfah*, *‘alaqah* and *mudghah* stages occur before 42 days.

Yet no explanation is given as to how the claim that an angel “shapes” the embryo after 42 nights “clearly indicates that the *nutfah*, *alaqah* and *mudghah* stages occur before 42 days.” After all *alaqah* (blood clot) and *mudghah* (lump of flesh) also have “shapes”. Hamza also provides the following poorly explained reasoning in defense of the erroneous hadith,

Additionally, the tradition in question uses the phrase ‘like that’ which can be understood as a repetition of the time period. The phrase is *mujmal*, which in the classical sciences means general, whereas the aforementioned tradition is *mubayyan*, meaning explicit. The rule according to the classical sciences is that the general is specified by the explicit to give an accurate portrayal of the meaning and intention of the speaker. Many scholars such as Imam Malik and the 7th century scholar Ibn Azzamlakani reached the conclusion that the *nutfah*, *‘alaqah* and *mudghah* stages occur during the first 40 days.

For the purpose of convenience and clarity, the examination of Hamza's argument will begin from the bottom. Hamza last point states that "many scholars" state that all the three Qur'anic stages occurred during the first 40 days. Unsurprisingly, Hamza does not bother providing any references or verifiable sources for his claim. However, what Hamza does not state is that this is merely a minority opinion. The majority of scholars agree with what the hadith blatantly states, i.e. it is referring to a 120 day period. This topic was important to scholars primarily due to the issue of abortion. The following two *fatwas* (legal opinions of scholars), found in two Islamic jurisprudence websites state the following;⁸³

The fuqaha' of the Sunni Islamic madhabs are agreed that it is haraam to kill the foetus after the soul has been breathed into it, i.e., after 120 days have passed since conception. It is not permissible to kill it under any circumstances except when continuing the pregnancy would lead to the mother's death.

Before mentioning the ruling on abortion with regards to these two stages, it must be remembered here, that according to Shariah, the soul (ruh) enters the foetus at 120 days (4 months) from conception.

The Jurists (fuqaha) have based this duration upon a Qur'anic verse and a statement of the beloved of Allah (Allah bless him & give him peace). In the verse, Allah Almighty states the stages of development of the embryo in the womb of the mother. Allah Almighty says:

"And verily we did create man from a quintessence (of clay). Then we placed him (as a drop of sperm) in a place of rest, firmly fixed. Then we made the sperm into a clot of congealed blood. Then of that clot we made a (foetus) lump. Then we made out of that lump bones and clothed the bones with flesh. Then we developed out of it another creature (by breathing life into it). So blessed be Allah, the most marvellous creator." (Surah al-Mu'minun, 12/13/14)

In the Hadith recorded by the two most authentic authorities, Imam al-Bukhari and Imam Muslim in their respective Sahih collections, the Messenger of Allah (Allah bless him & give him peace) discussed in detail the periods elapsing between these stages, mentioned by the Qur'an.

Sayyiduna Abd Allah ibn Mas'ud (Allah be pleased with him) narrates that the Messenger of Allah (Allah bless him & give him peace) said:

"The seed of one of you remains in the womb of the mother for forty days in the form of a Nutfa (sperm). Then it remains like a clot for another forty days, and then for a same number of days like a lump of flesh (when the formation of the limbs and the growth of the bones begin)." (Sahih al-Bukhari & Sahih Muslim)

There is also no hiding the fact the most sensible understanding of the first hadith is that it is indeed referring to a 120 day period; yet Hamza managed to hide it. Concerning the minority view held by such influential figures as Imam Malik, it would be important to understand their reasoning behind their conclusion. However, **Hamza failed to provide any sources for this claim** and thus it is difficult to verify their exact reasoning. Tragically, there are no good reason to trust Hamza given that he tends to misrepresent and lie about his sources (refer to "*Distorting the meaning of 'taraib'*" above). Nevertheless, one may assume for the purpose of discussion that their reasoning was based on hadiths such as the following;⁸⁴

Sahih Muslim Book 33, Hadith 6392: “When the “*nutfah*” remains in the womb for forty or fifty (days) or forty nights, the angel comes...”

Sahih Muslim Book 33, Hadith 6393: “When forty nights pass after the “*nutfah*” gets into the womb, Allah sends the angel and gives him shape. Then he creates his sense of hearing, sense of sight, his skin, his flesh, his bones, and then says: My Lord, would he be male or female?”

The second hadith, (Sahih Muslim 6393) is the same one listed by Hamza in his paper;

When 42 nights have passed...God sends an angel to it, who shapes it.¹⁹¹

Rather curiously, Hamza did not provide the entire quote despite it being very short. Neither does he properly cite the actual hadith as his reference merely says,⁸⁵

¹⁹⁰ Al-Bukhari and Muslim, narrated by Ibn Mas'ud.

¹⁹¹ Narrated by Muslim, Kitab al-Qadar.

Perhaps this was done with purpose of hiding the reference to “*nutfah*” in the following words, “When forty nights pass after the “*nutfah*” gets into the womb,” This was perhaps done to avoid anyone getting the potential idea that the “*nutfah*” stage remains in the womb for 40 days. Unfortunately for Hamza and other apologists, this is exactly the case as demonstrated by the following two hadiths;

Sahih Muslim, Book 33, Hadith 6395: “The *nutfah* stays in the womb for forty nights, then the angel, gives it a shape.”

Sahih Muslim, Book 33, Hadith 6392: When *nutfah* remains in the womb for forty or fifty (days) or forty nights, the angel comes...”

Whether one accepts the accurate meaning of “*nutfah*” or the imaginary one forced by Hamza, these two hadith are undeniably in error. Muhammad states that the “*nutfah*” remains for 40 days which, according to Hamza’s understanding of “*nutfah*”, would mean that for the first forty days, the embryo is a single celled zygote.

Additionally, the hadith is scientifically erroneous in many aspects. For example, it states that on the 40th day (or after), an angel is sent to the embryo and gives it shape suggesting that the embryo remained shapeless before the 40th day. This suggestion is consistent with Muhammad’s belief that humans remained as semen for the first 40 days. Likewise, the hadith suggests that the 40 day old shapeless substance is given skin, flesh and bones by a supernatural being. This contradicts the natural and gradual growth and formation of skin, bone and muscles which begins much earlier than 40 days.

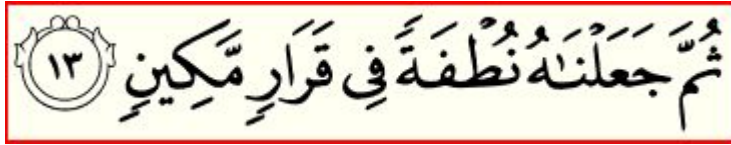
Furthermore, one can use this hadith to explain the disputed hadith (**Bukhari 430**) regarding the time period of the stages. Since Muhammad has stated that the “*nutfah*” stage remains for 40 days and “*alaqah*” and “*mudghah*” are supposed to follow “*nutfah*” then the only reasonable explanation of the hadith in Bukhari is that it is referring to a 120 day period. It is not logically possible for all the three stages to occur in the same 40 day period as Hamza suggests.

In conclusion, a holistic understanding of the hadith collection reveals that the only reasonable explanation for the hadith under discussion is that it refers to a 120 day period. The assertion by Hamza that it is referring to a 40 day period is nonsensical and it fails to take into account all the information provided in hadith as well as the views of the majority of scholars. Thus, the ideas regarding embryology in the Islamic sources are inaccurate and erroneous.

iii. Summary of Refutation

Much importance was placed on the word “*nutfah*” by the Muslim apologist, Hamza Tzortzis. The claims he made regarding this word was one of the central points in his paper. Yet Hamza sought to support his claims by resorting to every dishonest tactic available to him. His primary claim regarding the definition of “*nutfah*” being **a drop containing** a sperm cell or ovum was inaccurate as it was based on false inference from a mistranslation of primary sources such as Lisan-al-Arab. Furthermore, upon a diligent study of the primary sources provided by Hamza as his references, it was revealed that the word “*nutfah*” does in fact refer to “semen”; a fact repeatedly denied by Hamza with no credible support. The other claims made by Hamza regarding “*nutfah*” also revealed many instances of quote-mining, misrepresentation and suppression of evidence. Many instances of mistranslations, improper referencing as well as inadequate referencing were also observed. Many of Hamza’s arguments for defending some of the blatantly erroneous statements made by Muhammad were logically fallacious. Perhaps the most hypocritical statement in Hamza’s paper is when he accused his critics of lacking a “holistic understanding” understanding of the information in the Islamic texts. Yet, the fact of the matter is that the only person lacking a holistic as well as a sensible understanding of the information in the Islamic texts as well as other academic sources is none other than Hamza Tzortzis.

3. In a Safe Place (*Qararin Makeen*)



Transliteration: Thumma Ja'alnaahu Nutfatan fi **Qararin Makeen**

Translation: Then We placed him as a droplet in **a firm lodging**

i. Summary of Hamza's Claims

Hamza Tzortzis defines the phrase "*fi qararin makeen*" as "**in a safe place**". From this definition, he concludes that "*qararin makeen*" refers to "**the blastocyst sinking 'deeper and deeper' and the sealing off of the endometrium with a 'fibrin clot' ensuring that the blastocyst is 'completely encased'**".⁸⁶

ii. Refutation of Hamza's Claims

When analyzing the argument provided by Hamza for the extraordinary meanings of "*qararin makeen*", one inescapable question is bound to enter the minds of every rational and skeptical person; **what is the argument?** Hamza begins by defining the several meanings of the **root words** of "*qararin*" and "*makeen*". He states the following,

The next stage in the process of human development is *qaraarin makeen*. The word *qaraarin* means to make sedentary, to establish, to assign, to schedule, to determine, to stipulate, to regulate and to decide; and it carries the further meanings of to confirm, to establish and to affirm.⁵² The word *makeen* has meanings that include to place, to put or set down firmly and to put in position.⁵³ The combination of these two words provide connotations of: **in a safe place**, in a place firmly fixed, in a safe lodging and in a firm resting place.

The definitions were taken from a dictionary of modern Arabic called, *Hans Wehr. A Dictionary of Modern*. Hans Wehr specifically defines "*qarar*" and "*makeen*" as the following;^{87,88}

قرار *qarār* sedentariness, settledness, stationariness, sedentation; fixedness, fixity; firmness, solidity; steadiness, constancy, continuance, permanency, stability; repose, rest, stillness; duration; abode, dwelling, habitation; residence; resting place; bottom (e.g., of a receptacle); depth (of the sea); (pl. -āt) decision, reso-

مكين *makīn* pl. مكان *mukana*⁸⁷ strong, firm, solid; firmly established, unshakable; deep-seated, deep-rooted, deeply ingrained, inveterate (feeling); influential, distinguished, of note, of rank, respected; powerful, potent

The most accurate meaning of “*qararin makeen*” would be that of, “**a place firmly fixed, a firm resting place**” etc. With this definition at hand, Hamza then makes the following claims,

SCIENTIFIC INTERPRETATION

The terms used by the Qur'an at this stage coincide with modern embryology. The zygote divides into a ball of cells with an outer shell to form the blastocyst. Studies in embryology assert that around the 6th day after fertilization, the blastocyst implants itself securely into the uterine wall. John Allan and Beverley Kramer explain the process of implantation:

Implantation begins at about the 6th to 7th day after fertilization. The part of the blastocyst projecting into the uterine cavity remains relatively thin. The syntrophoblast contains a proteolytic enzyme which causes destruction of the endometrial cells so that that the blastocyst sinks deeper and deeper into the uterine mucosa...The

final deficiency in the endometrium is sealed off by a blood or fibrin clot, overlying the blastocyst. This cover is called the operculum. By about 10 to 12 days after fertilization, the blastocyst is completely encased in the endometrium and thus, implantation is complete.^{5*}

In summary, Hamza defines “*qararin makeen*” as “a fixed or firm resting place” and then immediately concludes that these two words are describing the blastocyst embedding itself into the uterine wall i.e. the process of implantation. He states,

The analysis of the words *qaraarin makeen*, reflect modern developments in embryology. The meanings offered by the combination of the words *qaraarin makeen* depict the blastocyst sinking ‘deeper and deeper’ and the sealing off of the endometrium with a ‘fibrin clot’ ensuring that the blastocyst is ‘completely encased’.

One can only stay marveled at the amount of lipstick put on a certain ungulate. If Hamza had even a grain of integrity, he would at the bare minimum have listed the idea that “*qararin makeen*” or “fixed place” is simply referring to the womb of the mother.

Putting it another way, one could genuinely ask if a person in the 7th century could utter the words “in a fixed place” **without** any knowledge of blastocysts and implantation. The answer without a doubt is yes as this is a statement anyone could make about the mother’s womb. Yet, there is no such suggestion in Hamza’s paper. He dispassionately asserts that the simple phrase, “a fixed place” is referring to microscopic events like implantation. Nevertheless, for the purpose of completion this extremely weak argument will be analyzed as well.

The single positive aspect about this argument is the fact that it is the only part of his paper that does not present misrepresented sources. This time he decided to stick exclusively with logically fallacious and inconsistent arguments.

There are two difficulties for Hamza's argument; 1) Invalidity of the Argument & 2) Inconsistency of the Argument.

(1) Invalidity of the Argument

Hamza's argument can be described with the following syllogism,

- 1) Description of "Implantation" uses the phrase "firm place"
- 2) A description in the Quran uses the phrase "firm place"
- 3) Therefore, the description in the Qur'an is the description of "Implantation"

As discussed in detail in the introduction, this is a prime example of “**the fallacy of the undistributed middle**”.⁸⁹ Anyone familiar with even the basic principles of predicate logic would recognize the fallacious reasoning.

(2) Inconsistency of the Argument

Although Hamza's argument is invalid it is interesting to know that if the argument were a sound one, **the Qur'an would be in error** according to the understanding of Hamza Tzortzis. For elucidation, consider the entire verse 23:13 from the Qur'an which suspiciously Hamza does not provide in his section on “*qararin makeen*”. The verse is as follows;

Sura 23:13 – “Then We placed him as a *nutfah* in a firm lodging (*qararin makeen*).”

It is important to remember that Hamza stated that *qararin makeen* is referring to the implantation or the embedding of the **blastocyst** to the uterine wall. It is also worth remembering that Hamza's final verdict for the definition of *nutfah* was that it referred to a **zygote**. Even though all of Hamza's arguments for *nutfah* were refuted in the previous section, his definition of “zygote” will be assumed as the definition of *nutfah* in order to demonstrate the inconsistency of Hamza's incoherent work.

Before proceeding, it is also important to know what a blastocyst is. The single celled **zygote**, formed after the sperm fertilizes the ovum, divides itself to form two identical cells which further divide to become four then eight and then a sixteen cell stage called a morula. After this stage, the cells begin to differentiate from each other and then is called a blastula which then develops an ICM (inner cell mass which develops into the embryo) and an outer layer of cells called trophoblasts (develops into placental membrane). The blastula containing the ICM is called the **blastocyst**. The following image demonstrates the concept graphically;⁹⁰

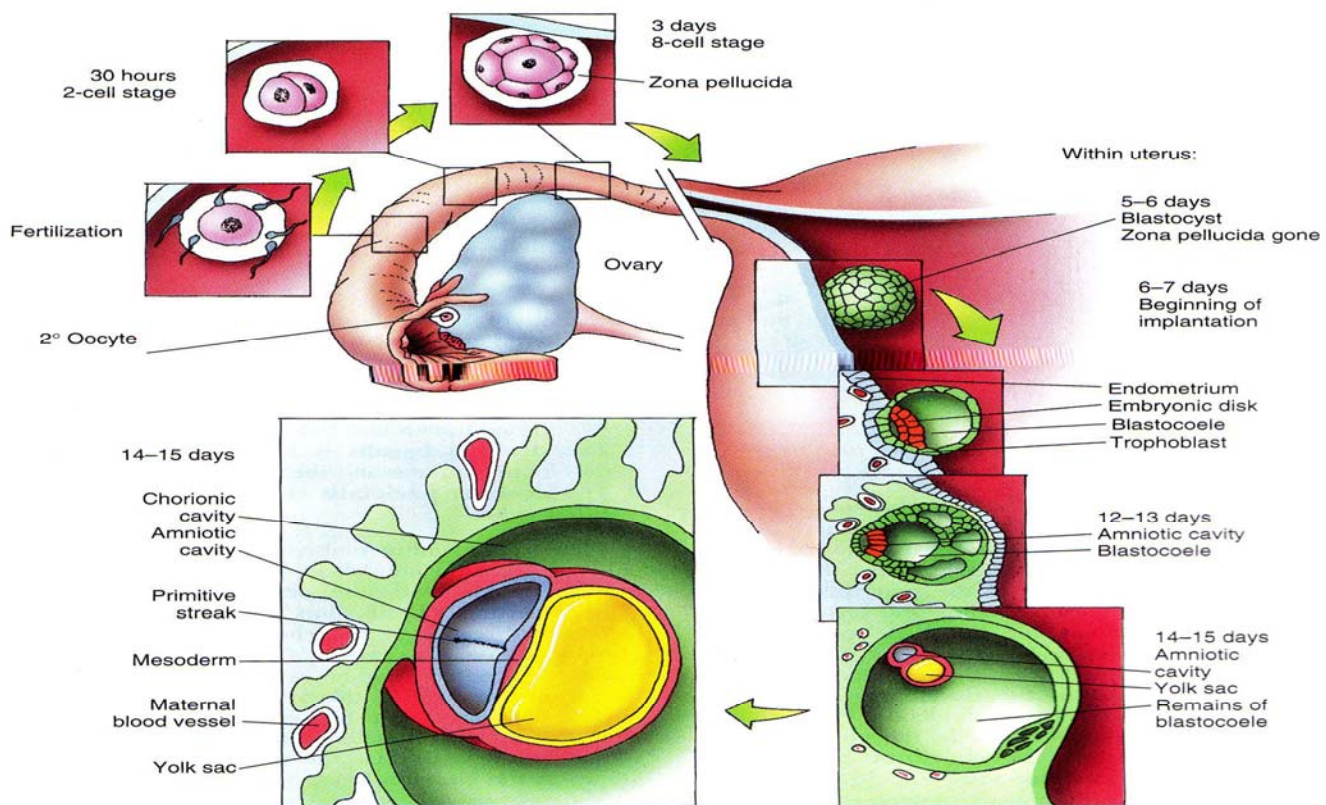


Figure 20-14 Diagram of the process of fertilization, zygote formation, morula and blastocyst development, and implantation.

The important point to gather is that **the zygote develops into the blastocyst** i.e. the zygote and blastocyst are distinct stages of development. With this information at hand, the inconsistency of Hamza's explanation becomes apparent.

Since sura 23:13 says that the "**nutfah**" has been placed in "a fixed place" and since Hamza's definition for "**nutfah**" is that of the **zygote**, it necessarily follows from his understanding that "**zygote has been place in a fixed place**". However, Hamza has also stated that the placing "in a fixed place" refers to implantation i.e. the embedding of the **blastocyst**. Putting Hamza's understanding of "**nutfah**" and "**qararing makeen**" together, the following conclusion is inevitable reached; "The placing of the **zygote** in a **fixed place** is **equivalent** to the embedding of the **blastocyst** in the uterine wall."

Therefore Hamza would either be saying that "the zygote is equivalent to the blastocyst" or that "the single celled zygote is embedded in the uterine wall"; both of which are factually incorrect. Hamza, due to his lack of a "holistic understanding" of the entire verse, has failed to connect the dots and see the bigger picture of his arguments and the inevitable mess it leads to. Thus, Hamza's argument, apart from being logically fallacious, would also render the Qur'an erroneous if it were to be sound.

iii. Summary of Refutation

In conclusion, Hamza's argument is neither valid nor consistent with his own understanding of the Qur'an. The inconsistency of his argument revealed that if his claims were valid then his own understanding would ultimately conclude that the Qur'an is erroneous. Having said that, it is important to not lose sight of the fact this refutation of Hamza's claims regarding "*qararin makeen*" has merely been an exercise in silliness. Even Hamza's explanation was unconvincing let alone coherent. Given that the verse refers to the *nutfah* (semen) being placed in a fixed place, the most obvious explanation from the context is that it is referring to the womb of the mother. This is the only sensible explanation for the verse. Thus, Hamza's invalid, inconsistent and indefensible explanation is rightfully dismissed.

4. A Clinging Form (Alaqah)



Transliteration: Thumma Khalaqna al-Nutfah **Alaqah**

Translation: Then We made the droplet into **a clot**

The word “*alaqah*” is perhaps the most discussed term in the preceding three decades of Islamic apologetics. Much of its popularity owes to the word’s association with Professor Keith Moore, an anatomist from the University of Toronto. Due to certain statements made by Moore, his name had become a common “household” term for even the most amateur Islamic apologist. The routine proselytizing method used by these apologists would include claiming there was scientific foreknowledge in the Qur'an and drop the name of Keith Moore in the same breath. Any objections, even if valid, would be met with the cliqued and outdated rhetorical response of, “Are you an embryologist?”⁹¹

The apologetics continued in the same manner for three decades without showing any understanding of the logical fallacy called *argumentum ad verecundiam* or argument from authority. The fallaciousness of the apologetics was made worse in this particular case due to the fact that Keith Moore is a false authority. Apologists often do not realize that Keith Moore is an anatomist/ embryologist and his “authority” would not extend beyond these fields. Yet, he was used as an authority to explain and interpret the Qur'an, an Arabic book that Moore neither follows nor understands. Moore neither became a Muslim nor does he speak Arabic.

In other words, anyone who claims that the Qur'an contains scientific foreknowledge on the authority of Keith Moore is in fact relying on a man who holds no authority in stating what the Arabic words in the Qur'an mean. In fact, Keith Moore stated the following,

“As Dr. Persaud said, we don’t read Arabic. The Scholars translated for us. We simply give our interpretations. We are not saying they are accurate.”⁹²

Regardless, Hamza Tzortzis seems to have made very little use of Keith Moore in his paper. This was perhaps a reaction to their display of their fallacious reasoning before Professor P.Z. Myers in which the usual apologetic tactic of dropping the name of Moore backfired as professor PZ Myers was an embryologist.⁹³

Nevertheless, the three previous stages already discussed have not succeeded in establishing the miraculous or extraordinary nature of the Qur'an. Thus, it was not much of a surprise to realize that the next stage of “*alaqah*” would also be another failed attempt.

i. Summary of Hamza's Claims

1. Hamza states that "*alaqah*" has several meanings.⁹⁴ The following four definitions are then selected; a) "Hanging/Suspended", b) "Suckling Blood", c) "Leech/worm like substance" and d) "Blood-clot". Hamza claims these four definitions of "*alaqah*" correspond to various stages of human development.⁹⁵

a) "Hanging/Suspended" – corresponds to the embryo "hanging" or being "suspended via the connecting stalk."

b) "Suckling Blood" – refers to the embryo obtaining "nutrients through contact with the maternal blood vessels."

c) "Leech/worm like substance" – refers to the closing of the "cranial and caudal end of the neural tube, also known as neurulation" which gives the embryo an appearance of a leech/ worm.

d) "Blood-clot" – refers to "the development of the primary cardiovascular system and the fact that blood does not circulate until the end of the third week."

2. Hamza claims that it is valid to ignore the structure of the yolk sac in order to establish the claim that the embryo has a "leech like" appearance. He also claims that the embryo would look "leech like" even if the yolk sac was to be considered as a part of the embryo.⁹⁶

ii. Refutation of Hamza's Claims

Consistent with the lack of logic in the previous section (*Qararin Makeen*), Hamza continues his fallacious reasoning with the term, "*alaqah*". The general fallacy committed in this section is the fallacy of the undistributed middle. Hamza's arguments follow the reasoning below (let X = a meaning of *alaqah* and Y = an stage in human development);

- 1) Description of "Y" uses the word(s) "X"
- 2) A description in the Quran uses the word(s) "X"
- 3) Therefore, the description in the Qur'an is the description of "Y"

The fallacy behind Hamza's argument has been discussed in the introduction of this paper. The significance of Hamza's fallacious arguments is made worse upon the realization that he has in his usual manner relied on misrepresented and inaccurate definitions of "*alaqah*".

(1) Misrepresentation of the meaning of Alaqah and Fallacious Inferences

Hamza has provided four meanings for the term "*alaqah*". They are a) "Hanging/Suspended", b) "Suckling Blood", c) "Leech/worm like substance" and d)

“Blood-clot”. Hamza then correlates each definition with some process or stage in the course of human embryological development. His reasoning for each claim is examined below for its accuracy and validity.

(a) “Hanging/Suspended”

Hamza states the following on page 19 of version 2.1b,

The Qur'an describes the next stage of the developing human embryo with the word *‘alaqah*. This word carries various meanings including: to hang, to be suspended, to be dangled, to stick, to cling, to cleave and to adhere. It can also mean to catch, to get caught, to be affixed

Hamza lists the meaning of the **root word** of “*alaqah*”, which is “*alaq*”, and it has the meaning of hanging or clinging. From the definition of the root word, Hamza seemingly concludes that the word “*alaqah*” can refer to anything that is hung or suspended

According to modern embryology, from day 15, the embryo is hanging or suspended via the ‘connecting stalk’ [see *Figure 1*] and it obtains nutrients through contact with the maternal blood vessels. This description bears a striking resemblance to the picture painted by the word *‘alaqah* – a ‘hanging’ or ‘suspended’ substance, obtaining nutrients from its host’s blood. ~~Following this, during the 4th week, two processes occur: when the cranial and caudal~~

Consider the implication of Hamza’s interpretation. The root word “*alaq*” means to hang or to stick.⁹⁷ Hamza then infers that the derived word “*alaqah*” can refer to anything that hangs or is suspended or clings. Such a vague generalization would allow one label practically everything as an “*alaqah*”. A person could refer to his jacket as “*alaqah*” if it is hung in a closet or is clinging to his body. Every fruit or flower that is hung or clings on trees; plants etc can be labeled “*alaqah*”. Every flying bird can be interpreted as “hanging” in air and thus labeled as “*alaqah*”. Even the earth, other planets and stars etc can be thought of as being suspended in space and thus labeled as “*alaqah*”. The possibilities seem endless.

The take home lesson seems to be that every object imaginable seems to be associated in one way or the other to the words “hang”, “suspend” or “cling”. In fact, a physical object that neither hangs nor suspends nor is suspended nor clings seems inconceivable.

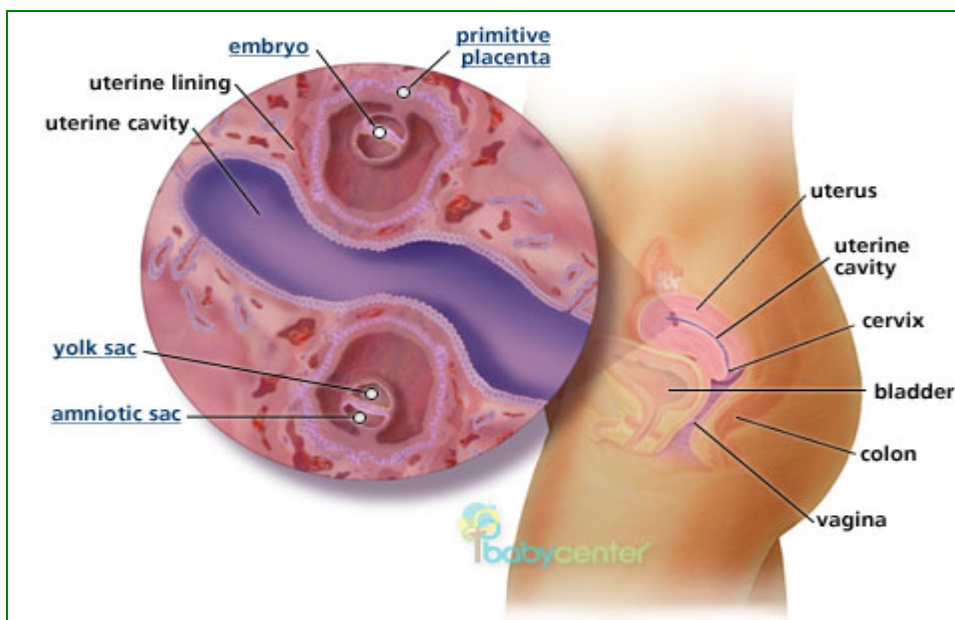
If any physical object can thus be generalized and labeled as “*alaqah*” then it is quite clearly meaningless for Hamza to claim that the term “*alaqah*” with its meaning of “hanging substance” refers to some specific stage of human development.

Another difficulty for Hamza’s argument would be that it is inconsistent with the words of the Qur'an and the hadith. The point to be noted is that the embryo

remains suspended in the amniotic cavity and attached or **clinging** to the umbilical cord till the baby is born. In other words, if Qur'an's use of "*alaqah*" is describing the suspension of the embryo, then "*alaqah*" would have to be an overarching stage that describes the embryo throughout the course of most of its development. Yet the Qur'an in 23:14 states that the "*alaqah* is made into a piece of meat (*mudghah*)". The hadith (Sahih Bukhari Vol. 4, Book 54, Hadith 430⁹⁸) also state that "*alaqah*" begins on the 40th day and ends on the 80th day (Hamza fallaciously believes it refers to the first 40 days alone, as was discussed in the nutfah section, but the above problem would remain). This problem from Hamza's interpretation is inevitably a result of the much generalized defining of "*alaqah*" as referring to anything that is suspended or hanging or clinging.

Hamza's understanding of *alaqah* thus "lacks a holistic understanding" of the Islamic texts as the larger picture is once again ignored. If "*alaqah*" does in fact refer to the "suspension of the embryo", then the Islamic texts would be incorrectly saying that the embryo is only suspended for 40 days after which it becomes a piece of meat. Thus one can conclude that, if Hamza's understanding of "*alaqah*" as a "suspension of the embryo" is true, **then the Qur'an is factually incorrect.**

Furthermore, it is highly doubtful that "*alaq*" in the sense of "hanging" would be a good way to describe the embryo in relation to the connecting stalk. Lane's lexicon page 2134, used by Hamza, strongly indicates that "*alaq*" is not just the thing which is hung, but the entire apparatus or vertical rope by which means it is suspended, or even just the rope itself, giving the example of a suspended bucket in a well.⁹⁹ The stalk evidently has a certain amount of stiffness and does not hang vertically under gravity like a bucket in a well. More importantly, the uterus lies fairly horizontal at this time, so depending on the side of the uterus implantation occurs; the early embryo can also be above its stalk, as this diagram of twins at 4 weeks nicely demonstrates,¹⁰⁰



Various studies of placentas and ultrasound scans have found that between 26% and 53% of implantations occur on the anterior (frontal) wall of the uterus (like the lower twin in the diagram).¹⁰¹ Clearly Islamic apologists should expect better of a divine author than to say that as early embryos, humans are "hanging things" when such a description is neither true for a significant percentage of the population nor even a general rule; and this scientific inaccuracy should be considered before even raising the doubts above about the suitability of the word “*alaqah*” as defined in the Lexicon to describe embryos on the posterior wall.

Apart from being inconsistent and inaccurate, Hamza’s argument also suffers from the fact that it is mundane and unimpressive. This is due to the fact that the “connecting stalk” is the precursor to the umbilical cord. Thus the idea that embryo is hanging or connected to a “cord” is a reasonable extrapolation of the fact that infants are born with their umbilical cord attached. In other words, if the term “*alaqah*” does in fact refer to the connecting stalk suspending the embryo, it would **not** be any indication of knowledge beyond that of man’s observations. In fact, the same sentiment can be found expressed in the Babylonian Talmud (written before Muhammad even existed);¹⁰²

not in fact taught, 'When they¹⁵ issue they do so only while clinging to one another'?¹⁰ — R. Papa replied: From this¹⁷ it may be inferred that the embryo clings to the sandal at the middle of the latter.¹⁸

Nevertheless, it should also be noted that Hamza does not provide any evidence from the sayings of Muhammad or the early Islamic scholars for validating his claim that “*alaqah*” refers to “the suspension of the embryo via the connecting stalk.”

(b) “Suckling Blood”

Hamza states the following in his description of the meaning of “*alaqah*”;

~~or subjoined.⁵⁵ Other connotations of the word ‘*alaqah*’ include a leech-like substance⁵⁶, having the resemblance of a worm; or being of a ‘creeping’ disposition inclined to the sucking of blood. Finally, its meaning includes clay that clings to the hand, blood in a~~

Hamza initially defines “*alaqah*” as “a leech-like substance” or “a creeping disposition inclined to the **sucking of blood**.” Yet in his main discussion, a slight of hand is used through which the “**sucking of blood**” is treated as “**suckling blood**” or as the much more general definition of “**obtaining nutrients from it’s host’s blood**”. It is worthwhile noting that Hamza gives no source for his claims that *alaqah* means “suckling blood”. The Lane’s Lexicon definition only mentions the verb suck in relation to leeches and similar creatures.¹⁰³ Hamza concludes the following;

According to modern embryology, from day 15, the embryo is hanging or suspended via the 'connecting stalk' [see *Figure 1*] and it obtains nutrients through contact with the maternal blood vessels. This description bears a striking resemblance to the picture painted by the word *'alaqah* – a 'hanging' or 'suspended' substance, obtaining nutrients from its host's blood. ~~Following this, during the 4th week, two processes occur: when the cranial and caudal~~

Momentarily ignoring the inaccuracy of Hamza's "leech-like" definition, it is rather astonishing to see Hamza making arbitrary and generalized inferences and then conveniently concluding that his inferences are among the definitions of "*alaqah*".

The first question to be asked is whether Hamza's definition of "*alaqah*" as "an entity obtaining its nutrients via blood" is accurate. The point to be noted here is that "*alaqah*" literally means "leech" or other "leech-like worms" as explained in Lane's lexicon;

and عرق]. (S, O.) — Also [*Leeches*;] *certain worms, (S,) or certain things resembling worms, (Mgh, Mṣb,) or certain small creeping things, (O,) or a [species of] small creeping thing, (K,) black, (Mgh, Mṣb,) or red, (TA,) found in water, (S, O, Mṣb, K,) and having the property of sucking blood, (S, O, K, TA,) and employed to suck the blood from the throat and from sanguineous tumours: (TA:) they cling (Mgh, Mṣb) to the حَنَك [q. v.] (Mgh) or to the fauces (Mṣb) of the beast when he drinks, (Mgh, Mṣb,) and suck the blood: (Mṣb:) one thereof is termed عَلَقَةٌ. (S,*

Lane's lexicon would suggest that defining "*alaqah*" as "an entity obtaining its nutrients via blood" is **inaccurate** as the more accurate picture is that of an entity "**having the property of sucking blood**" or clinging to "**suck the blood from the throat**" and other parts of the body like a leech. Thus the accurate definition of "*alaqah*" would evoke the unrealistic image of the embryo trying to suck the blood from the inside of the mother's womb.

This is hardly an accurate picture of fetal circulation and nutrition. Ram Sharma and Barry Mitchell, two of Hamza's trusted sources, state the following regarding this stage of development;

"Due to the rapid growth of the embryo during the second week, there is a need for a more efficient means of nutritional and gaseous exchange. This is achieved when the embryonic blood vessels of the chorion come into contact with the maternal blood vessel of the decidua.

The umbilical arteries carry the deoxygenated blood from the embryo to the chorion and umbilical veins return the oxygenated blood to the embryo."¹⁰⁴

“The exchange of nutrients, respiratory gases and waste products between the maternal and fetal blood takes place across the placental membrane (see below) within the intervillous spaces. Maternal blood enters these spaces from the spiral arteries, branches of the uterine artery, bringing nutrients and oxygen for the embryo and fetus, and the endometrial veins drain the waste products to the maternal circulation.”¹⁰⁵

Unlike a leech, which merely sucks the blood from the host, the embryo circulates blood with the mother, returning blood to her to be re-oxygenated. A leech however, “steals” the blood of the host while the embryo is involved in an “exchange of nutrients, respiratory gases and waste products” with the mother. Thus the “blood sucking” behavior of the leech is one of the least accurate representations of the reality of fetal circulation. On a funnier note, Hamza’s idea of defining “sucking blood” as “obtaining nutrients via blood” and then associating it with fetal circulation is the equivalent of defining “robbing banks” as “obtaining money via banks” and then describing all the customers of a bank as “bank robbers.”

Furthermore, Hamza’s definition faces the same difficulty raised in the discussion regarding the definition of “hanging/suspended”. It should be noted that the embryo and later the fetus obtains its nutrients via the mother’s blood for most of the course of its development. Yet, as stated before, the Islamic texts specify that “*alaqah*” stage occurs between the 40th and 80th day (or the first 40 days according to Hamza). Thus if Hamza’s understanding were correct, then the Qur’an would be incorrectly stating that the embryo only obtains its nutrients from the mother’s blood for 40 days.

Hamza, due to his lack of a holistic understanding of the Muslim texts has once again interpreted words in the Qur’an that would ultimately render the Islamic holy book erroneous. Nevertheless, it should be noted again that Hamza does not provide any evidence from the sayings of Muhammad or the early Islamic scholars for validating his claim that “*alaqah*” refers to the “embryo obtaining its nutrients via the mother’s blood.”

(c) “Leech/worm like substance”

“Leech/worm like substance” is the definition of “*alaqah*” that has been made popular in the last three decades of Islamic apologetics. Hamza states the following,

~~or subjoined⁵⁵ Other connotations of the word ‘*alaqah*’ include a leech-like substance⁵⁶, having the resemblance of a worm; or being of a ‘creeping’ disposition inclined to the~~

Interestingly, instead of providing a source for this definition, Hamza gives the following explanation in his reference number 56;¹⁰⁶

⁵⁶ Although the literal meaning of the word is leech or worm, the co-text of the verse implies that it is leech-like. For example the statement: John is a lion, implies John was like a lion, whereas to say John has bones, means John has bones. Hence, some terms in this paper are taking literally and others are not due to the co-text and understanding of the Arabic language.

Thus, Hamza admits that **the literal meaning of the term “*alaqah*” is leech**. Yet for reasons highly suspicious, Hamza decided to display this information as a reference at the back of his paper instead of including it in the main text of his discussion. Perhaps, it is the realization that his inferences are once again weak.

Hamza’s defense seems to be that the word “**leech**” can also mean “**leech-like**”. As a justification, he provides an analogy with the statement, “John is a lion.” He then states that this statement does not mean that John is a carnivorous animal but that John is like a lion. Ignoring the possibility of a lion actually named John, when one makes a statement similar to “John is a lion”, it is referring metaphorically to certain attributes or qualities. “John is a lion” may imply that “John is aggressive like a lion” or “John is strong like a lion” etc. Similarly, if one were to say “John is a leech”, it may imply that “John is trying to obtain the wealth of another person” etc.

However, the important question is whether it is valid to state that the statement, “John is a lion” implies John has the same shape as that of a lion. Such a metaphorical usage is hardly common. Perhaps it is due to the fact that using metaphors to convey the actual shape of an object is ambiguous.

On the other hand, a usage such as “John is a pig” would suggest something about the appearance of the person but even in such cases, it does not mean that John is shaped exactly like a pig but rather that John is fat. Similarly, “John is a stick” would mean that John is skinny but not that he is exactly shaped like a stick. However, a point to be noted is that in each of these cases, the audience would be aware of what such a metaphorical usage would mean.

Thus, if one were to invent a new metaphorical usage based on appearance such as “John is a leech” then one could make any arbitrary comparisons since the audience are unaware as to what the usage refers to. In Hamza’s case, his arbitrary comparison is with the tubular shape of a 28-day embryo. Hamza then appeals to his favorite fallacy of the undistributed middle to then claim that “*alaqah*” refers to processes such as neurulation.

However, if this comparison is valid, it would be equally valid to say that the phrase “embryo is a leech” implies that “the embryo has two suckers for sucking blood on each end” or that “the embryo is segmented throughout its surface” or that “the embryo contains both testes and ovaries.” All these statements are equally valid if Hamza’s conclusions are valid since he has relied on a very arbitrary line of reasoning. Thus, using Hamza’s own logic, the Qur’an could be rendered erroneous.

One can also conclude that such a metaphorical understanding is unlikely from the context of the verses in the Qur'an where it is attempting to give a realistic description of human development. All the other stages mentioned by Hamza were taken literally yet he wishes “*alaqah*” to be given special consideration and suggests its treatment as a metaphor. This would be committing the fallacy of special pleading. It would also be suggesting that the Qur'an, apart from being ambiguous in its diction, is also inconsistent in its style.

In contrast, it would be more sensible to suggest that the author of the Qur'an would not resort to metaphors while providing a very brief description of embryology realistically. The use of metaphors would not be conducive for the purpose of conveying a factual and physical description of human development. Incidentally, there is a definition of “*alaqah*” that is both literal, thus consistent with the Qur'anic context, and well supported by the overwhelming majority of Islamic scholars throughout the past fourteen centuries. This definition is thus the most sensible definition as it does not rely on pointless generalizations, inaccurate inferences and arbitrary comparisons as was the case with the definitions of “hanging”, “suckling blood” and “leech like substance”. **The accurate and sensible definition of “*alaqah*” is that of “a blood clot”**

In fact, the following information found in *Lisan al-Arab* provides some insight into the origin of the “leech” definition of “*alaqah*”. *Lisan al-Arab* suggests that leeches were assigned the term “*alaqah*” because of its appearance resembling that of blood.¹⁰⁷

وفي التنزيل: ثم خلقنا النطفة علقة؛ ومنه قيل لهذه الدابة التي تكون في الماء علقة لأنها حمراء كالدم، وكل دم غليظ علق، والعلق: دود أسود في الماء

Translation: In the revelation (Qur'an): “Then we made the *nutfah* an *alaqah*” (verse 23:14); and from this it was said that the animal that lives in water is *alaqah* because it is red like blood, an all thick blood is *alaq*. And *al-alaq*: black worms in water.

Lisan al-Arab may suggest that the definition of blood clot is one of the overarching meanings of “*alaqah*” from which the definition of “leech/worm” were later derived.

Interestingly, Hamza and other Islamic apologists face a different dilemma. Hamza's insinuation is that the Qur'an refers to the embryological stages and details that would be unknown to Muhammad. Yet his entire claim rests on defining “*alaqah*” as leech-like. While there are no good reasons to believe that this is the definition of “*alaqah*” in the Qur'an, it would still not point to any miraculous knowledge in the Qur'an even if the convenient meanings are assumed. The Babylonian Talmud, which was written centuries before Islam, states something very similar;¹⁰⁸

IF AN ABORTION WAS IN THE SHAPE OF FISHES,
LOCUSTS, OR ANY FORBIDDEN ANIMALS OR CREEPING
THINGS, IF THERE WAS BLOOD WITH THEM SHE IS
UNCLEAN.⁹ OTHERWISE SHE IS CLEAN.¹³

The Rabbis are discussing an aborted fetus that is in the shape of a “locust” or a “creeping thing”. Incidentally, “creeping” was one of the definitions provided by Hamza for “*alaqah*”. The Talmud raises many possibilities; one of the which is that this was a common phrase or idea in ancient times. Some evidence for this idea being common place can be found in the Arabic lexicons. For example, the term “*doodha*” means worms. However, Lane’s lexicon also describes “*doodha*” as the fetus of a horse from the 40th to the end of the third month.¹⁰⁹

دُوْدُ a word of well-known signification, [Worms, grubs, maggots, and the like ; including molluscs ;

دُوْدَةٌ [n. un. of دُوْدٌ, q. v. — Also] The *fœtus* in the belly of a mare from the fortieth day, when its make becomes apparent, until the end of the third month. (Kr, TA voce دُعْمُوسٌ, q. v.)

Coincidentally, the period starting from the 40th day to the end of the third month (90th day) is also reflected in the words of Muhammad (Sahih Bukhari Vol. 4, Book 54, Hadith 430).

The other possibilities include Muhammad or someone he spoke to may have seen an aborted fetus and described it as “leech-like”. There is also the possibility that Muhammad or someone he may have spoken to received this idea from their interaction with the Jews of Arabia. Many such possibilities are thus plausible and they emphatically render the conclusion of Qur'an’s divine origin due to the term “*alaqah*” as unreasonable.

However, it should be remembered that there are no valid reasons to believe that the Qur'an meant “leech-like” when using the term “*alaqah*”. It will be demonstrated beyond any reasonable doubt that “*alaqah*” means “blood clot”.

(d) “Blood-clot”

With regards to Hamza’s discussion of “blood clot”, it is interesting to note that the previous versions of Hamza’s paper did not have such a discussion. This was included as a response to the critics who pointed out the meaning of “*alaqah*” is a “blood clot”. Here is Hamza’s attempt to defend the Qur'an by stating the definition of “blood clot” is also accurate. Hamza states the following,¹¹⁰

sucking of blood. Finally, its meaning includes clay that clings to the hand, blood in a general sense and thick, clotted blood - because of its clinging together.⁵⁷ This view (that

Hamza then repeats his weak usage of metaphors by saying that the “blood clot” definition actually means something that resembles a blood clot. He then claims that the literal definition of “blood clot” is also accurate. He states the following.

[see Figure 2, 3 and 4]. Another perspective on the embryo's external features is that it resembles that of a blood-clot. Although the word *'alaqah* means clotted blood in the sense that it clings, some classical linguists indicate that it can also refer to a blood-clot in its exact meaning. This perspective correlates with the development of the primary cardiovascular system and the fact that blood does not circulate until the end of third week

The following is Hamza's explanation as to how the definition of “blood clot” is supposed to be accurate. He quotes a rather lengthy paragraph with many technical terms. He states,

THE DEVELOPMENT OF THE PRIMARY CARDIOVASCULAR SYSTEM AND THE LACK OF BLOOD CIRCULATION UNTIL THE END OF THE THIRD WEEK

The development of the primary cardiovascular system is responsible for the blood-clot like external features of the embryo. By the end of the third week, the heart of the embryo connects with its blood vessels, the connecting stalk, the chorion and the yolk sac. It is during this period that the blood starts to circulate. Before this time the blood is fluid but does not move around the embryo. This resembles the physical description of a blood-clot. Keith Moore and P. V. N. Persuad explain:

The heart and great vessels form from mesenchymal cells in the heart primordium-cardiogenic area. Paired, endothelium-lined channels-endocardial heart tubes-develop during the third week and fuse to form a primordial heart tube. The tubular heart joins with blood vessels in the embryo, connecting stalk, chorion, and umbilical vesicle [yolk sac] to form a primordial cardiovascular system. By the end of the third week, the blood is circulating, and the heart begins to beat on day 21 or 22.⁶⁹

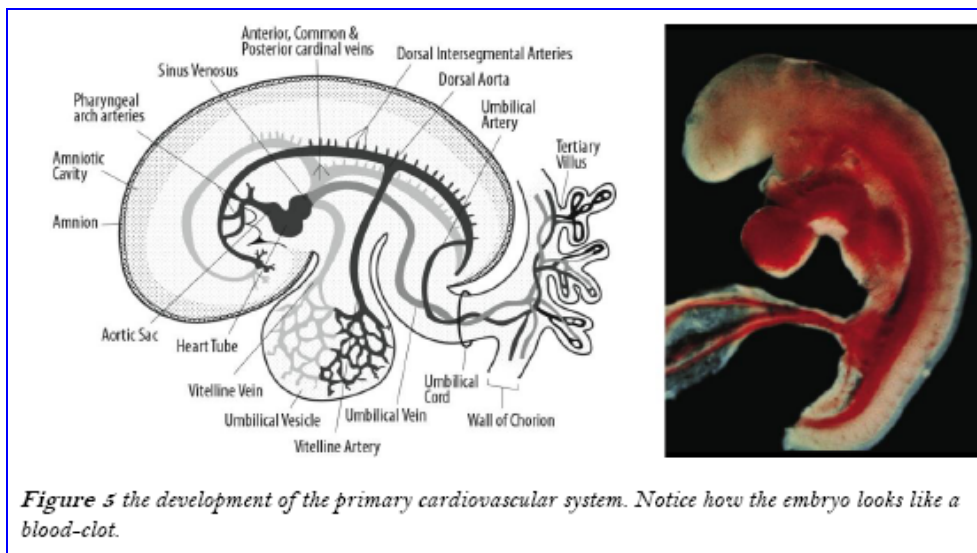
The only genuine question to be asked is “where in this seemingly irrelevant quote from Keith Moore is there any justification for the quranic statement that the embryo is a blood clot or, as per Hamza's invented interpretation, “resembles the physical description” of a blood clot?”

There is no doubt that the embryo at no point during its course of development becomes a blood clot. Being aware of this, Hamza tries a hand at his usual fallacious defenses. The first error appears in the slight of hand through which the definition of “blood clot” is treated as “something that resembles a blood clot”. This deceit suffers the same difficulties raised in the discussion regarding the definition “leech-like substance”.

The second error is in Hamza's claim that the embryo resembles a blood clot because the blood does not circulate until the third week. Hamza provides

absolutely no explanation as to how the non-circulation of blood in the embryo is tantamount to the claim that the embryo is a blood clot or that it resembles a blood clot. In fact, Hamza himself admits that the blood in the embryo is fluid which means that it is not clotted. Even if the blood at the stage is clotted, it would still be inaccurate to state that the embryo is a blood clot or that it resembles a blood clot. For an analogy, consider a dead body in which the blood has stopped circulating. Would it be accurate to say that the body is a blood clot or that it resembles a blood clot? Such a description would be absurd and incorrect.

After the quote from Keith Moore, Hamza provides the following image,



In the caption, Hamza states “notice how the embryo looks like a blood-clot”. In his usual manner, Hamza provides no explanations as to how the image is supposed to resemble a blood clot. Ironically, the only noticeable point in the image is how the embryo looks *nothing* like a blood clot.



Moreover, somewhere down the line an apologist has clearly **altered the image** to make it a little more “bloody”! Here (to the left) is the original image taken from an anti-abortion website (<http://survivors.la/educate-ld.asp>)

It would seem there is a positive correlation between academic dishonesty and religious apologetics.

:

Although Hamza failed to establish the definition of “blood-clot like substance”, the interesting point to be noted is that “*alaqah*” as used in the Qur’an does in fact refer to blood or a blood clot i.e. a literal blood clot.

Consider what Hamza stated in his definition of “*alaqah*” on page 19 of version 2.1b. He states,

sucking of blood. Finally, its meaning includes clay that clings to the hand, blood in a general sense and thick, clotted blood - because of its clinging together.⁵⁷ This view (that *‘alaqah* means clotted blood - because of its clinging together) is supported by Ibn Kathir, as he explains the word to mean a “dangling clot”.⁵⁸

He mentioned the reputed Classical Islamic scholar named Ibn Kathir who supported the idea that “*alaqah*” means clotted blood. However, what Hamza does not bother mentioning is that every respectable scholar for the last 1400 years have stated that “*alaqah*” means blood clot. In fact, Ibn Kathir’s work even quotes Ikrimah al-Barbari, a “very highly respected man of learning and piety” and one of the most “important disciples” of Ibn Abbass,¹¹¹ the cousin of Muhammad, as supporting the idea that “*alaqah*” is blood. Ibn Kathir states the following regarding verse 23:14,¹¹²

(Then We made the Nutfah into a clot,) meaning, ‘then We made the Nutfah, which is the water gushing forth that comes from the loins of man, i.e., his back, and the ribs of woman, i.e., the bones of her chest, between the clavicle and the breast. Then it becomes a red clot, like an elongated clot.’ Ikrimah said, “This is blood.”

Moreover, here is a list of over twenty Classical and modern scholars who have stated that “*alaqah*” is blood or clotted blood.

1. Ikrimah al-Barbari (died. 723 CE) – quoted in *Tafsir ibn Kathir*¹¹²
2. Zaid ibn Ali (d. 740 CE) – *Ghareeb al-Quran*¹¹³
3. Muqatil ibn Sulayman (d. 767 CE)¹¹⁴
4. Al-Tabari (d 923 CE) – *Jami al-bayan fi Tafsir al Quran*¹¹⁵
5. Al-Tabarani (d. 970 CE) - *al-Tafsir al-Kabir*¹¹⁶
6. Abu al-Layth al-Samarqandi (d. 985 CE) – *Bahar al-Uloom*¹¹⁷
7. al-Tha’labi (d. 1035 CE) – *al-Jawahir al-Hisan fi Tafsir al-Quran*¹¹⁸
8. Al-Mawardi (d. 1058 CE) – *al-Nakath wa al-Uyoon*¹¹⁹
9. al-Baghawi (d. 1122) – *Ma’alim al-Tanzeel*¹²⁰
10. Al-Zamakshari (d. 1143 CE) – *al-Kashaaf*¹²¹
11. Ibn ‘Atiyyah (d. 1151) – *al-Maharar al-Wajeez fi Tafsir al-Kitab al-Azeez*¹²²
12. Al-Tabarsi (d. 1153 CE) – *Majma’ al-Bayan fi Tafsir al-Quran*¹²³
13. ibn al-Jawzi (1201 CE) – *Zad al-Maseer fi ‘Ilm al-Tafsir*¹²⁴
14. Al-Razi (d. 1209 CE) – *Mafatih al-Ghayb, Tafsir al-Kabir*¹²⁵
15. Ibn Abd Al-Salam (d. 1261 CE) – *Tafsir al-Quran*¹²⁶
16. Al-Qurtubi (d. 1273 CE) – *al-Jami’ al-ahkam al-Quran*¹²⁷
17. Al-Baidawi (d. 1286 CE) – *Anwar al-Tanzeel wa Asrar al-Taweel*¹²⁸
18. Ibn Kathir (d. 1373 CE) – *Tafsir al-Qur'an al-Kareem*¹²⁹
19. Ibn Rajab (d. 1392 CE) - *Jami' al-'Uloom wal-Hikam*¹³⁰
20. Fairuz Abadi (d. 1414 CE) – *Tafsir al-Quran*¹³¹
21. Al-Suyuti (d. 1505 CE) – *Tafsir al-Jalalyn*¹³²

22. Ash-Shawkhani (d. 1834 CE) – *Fatah al-Qadeer*¹³³
 23. Muhammad Shafi‘ (d. 1976 CE) – *Maariful Quran*¹³⁴
 24. Muhammad Muhsin Khan (born 1927 CE) – *The Noble Quran*¹³⁵

There is no doubt in the fact that the overwhelming majority of scholars going back to the earliest years of Islamic scholarship have stated that the term “*alaqah*” as used in the Qur'an means “blood” or “clotted blood”. It is rather a sign of imprudence to then claim that “*alaqah*” merely resembles a clot or a leech.

Interestingly, more evidence for the fact that “*alaqah*” as used in the Qur'an means blood clot comes from the academic dictionaries and Lexicons. The Lane’s lexicon defines “*alaqah*” in the following manner,¹³⁶

(K.) — And *Blood*, in a general sense: or intensely red blood: (K:) or thick blood: (S, O, K:) or *clotted blood*, (K, TA,) before it becomes dry: (TA:) or *clotted, thick, blood*; because of its clinging together: (Mgh:) and عَلَقَةٌ signifies a portion thereof: (S, Mgh, O, K:) or this signifies a little portion of thick blood: (Jel in xcvi. 2:) or a portion [or lump] of clotted blood: (TA:) or the seminal fluid, after its appearance, when it becomes thick, clotted, blood; after which it passes to another stage, becoming flesh, and is what is termed مَضْغَةٌ. (Msb. [See Kur xxiii. 14.]) — Also [Attachment, as meaning] *tenacious*

Not only is “*alaqah*” defined as blood, thick blood, clotted blood etc but the explanation of Quranic verse 23:14 is given as “the seminal fluid after its appearance, when it becomes thick, clotted blood”. The same explanation can be found in *Lisan al-Arab* as well.

However, stronger evidence for the claim that the definition of “*alaqah*” being a “blood clot” can be found by examining the meaning of other terms derived from the same root word as that of “*alaqah*”. These terms are “*aliqat*”, “*ulooqun*” and “*alaqun*”. The Lane’s Lexicon defines these terms in the following manner;¹³⁷

his affair. (K.) — عَلَقَتِ الْمَرْأَةُ, (S, Mgh, O, K,) inf. n. عَلَوْقُ, (Mgh,) or عَلَقُ, (TA,) The woman *conceived*, or became *pregnant*. (S, Mgh,

The terms “*aliqat*”, “*ulooqun*” and “*alaqun*” are used specifically to mean a woman conceiving. The word “*alaqah*” has the definition of “blood clot”. The ancients believed that conception was the mixing of the seminal fluid mixed with the blood of the woman. In fact, this belief was even held by Islamic scholars long

after Muhammad's death. Such as the 12th century scholar Al-Razi who stated the following in his exegesis of verse 40:67;¹³⁸

كل إنسان فهو مخلوق من المنى ومن دم الطمث

Transliteration: Kul insan fa-huwa makhlooqa min *al-maniyy* wa min dam al-tamas

Translation: All humans are created from semen and from menstrual blood.

These evidences provide a unique perspective on how the term “*alaqah*” was understood by the ancient Arabs. Since the ancients believed that the conception was the mixing of seminal fluid with blood, it would then be reasonable to expect them to believe that the woman was pregnant or has conceived when she had a blood-semen mixture in her womb. Given that the Arabs used cognate words derived from “*alaq*” to signify conception or the blood-semen mixture, it stands to reason that the only sensible definition of “*alaqah*”, as used in the Qur'an, is that of “blood clot” or “blood” due to its consistency with the other cognates. Such coherency has to be ignored in order to adopt the other definitions provided by Hamza.

In fact, this perspective also highlights a historically coherent explanation for the information provided in Qur'anic verse 23:12-14, which states that semen, is placed in the womb and then the semen becomes “*alaqah*”. Muhammad has also stated that the semen remains in the womb for 40 days and then becomes an “*alaqah*”.¹³⁹ This is consistent with the Hellenic view of reproduction where semen was thought to remain for a period of time in the womb before it was filled with blood.¹⁴⁰ Once again, in order to adopt other definitions for “*alaqah*”, one would have to reject such consistencies. Such an arbitrary rejection is ultimately unjustified.

Furthermore, it is worth drawing one's attention to Sura 96, verse 2 (usually claimed to be the first words of the Qur'an) which states the following;

خَلَقَ الْإِنْسَانَ مِنْ عَلَقٍ

Transliteration: Khalaqa al-insana min *alaq*

Translation: Created man from *alaq*

The following point may not be conveyed by many of the prominent translations available today (except for that of Dr. Ghali). The verse states man (in the **singular**) is created from "alaq" (in the **plural**).

As per Hamza's faulty interpretations, would it make sense to suggest that a human was created from “leech-like **things**” especially given that a human is formed from a **single** tube-shaped embryo i.e. a **single** “leech-like **thing**”.

Now consider the more reasonable alternative in the definition of “blood clots”. The words “clot” and “clots” can be used interchangeably in various practical instances without changing the meaning of the sentence much similar to the way the words “drop” and “drops” can be used interchangeably to refer to a miniscule amount of a liquid in general due to the fact “drop” and “drops” do not refer to discrete quantities. Likewise, “clot” and “clots” do not refer to discrete quantities and therefore the above verse is most coherent when defined as “blood clot”.

Finally, it would be foolish for Allah, when describing a biological process, to use a word with a literal biological meaning (blood clot) that conflicts with the reality of the process being described. Even more so if cognates of the same word were used with incorrect Arab notions about conception. Would such a being fail to foresee that it would mislead Muslims about biology for centuries, and supply one of the many reasonable grounds for modern readers to suspect a very human origin for the Qur’an?

In summary, this refutation point demonstrates beyond any reasonable doubt that the definition of “*alaqah*”, as used in the Qur’an, means “blood clot” or “blood”. This definition is validated by the following factors; 1) Scholarly consensus, 2) Linguistic consistency, 3) Historical consistency and 4) Inaccuracy of other contending definitions. The other definitions provided by Hamza Tzortzis lack any such support and rely on the fallacy of the undistributed middle or on weak metaphors. Given that there are no good reasons to reject the definition of a literal “blood clot” or “blood”, accepting other definitions over the well supported one is random and baseless. Ultimately, the term “*alaqah*” demonstrates the erroneousness of the Qur’an with regards to human development.

Additional Information

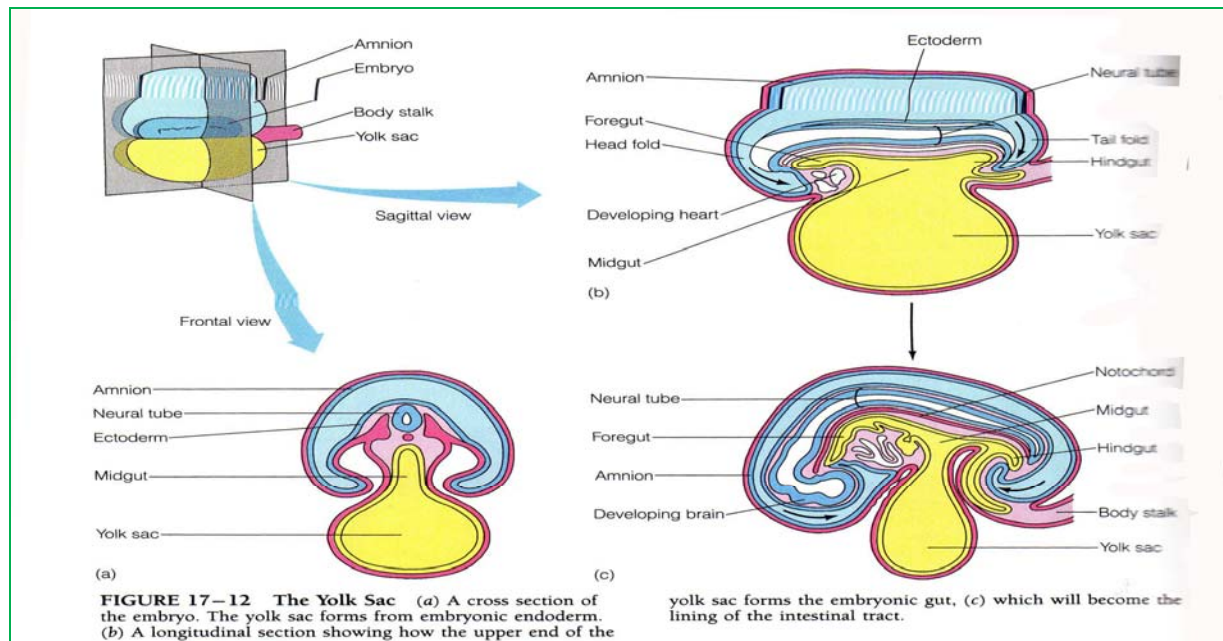
The classical Arabic Lexicon of *Lisan al-Arab* provides certain information that may provide a deeper understanding of the term “*alaqah*”. Lisa al-Arab states the following;¹⁴¹

والعَلَقُ مَا يَعْلُقُ بِالْإِنْسَانِ؛ وَالْمَنِيَّةُ عَلَقٌ وَعَلَاقَةٌ. قَالَ ابْنُ سَيِّدِهِ: وَالْعَلَقُ الْمَنِيَّةُ، صِفَةٌ غَالِبَةٌ؛ قَالَ الْمَفْضَلُ الْبَكْرِيُّ: وَسَائِلَةٌ بِشُعْلَبَةٍ بَنِ سَيْرٍ، وَقَدْ عَلِقَتْ

Translation: *al-alooq* is that which clings (or sticks) to a human; and semen (*al-maniyya*) is *alooq* and *alaaqa*. Ibn Saida said: *al-alooq* is semen. The epithet (*al-maniyya*) is dominant.

Lisan al-Arab states that some cognates of the term “*alaqah*” used to mean semen. While there is no reason to think that “*alaqah*”, as used in the Qur'an, meant semen, this information further weakens any attempt by apologists to glorify the word used in the Qur'an as an increasing amount of evidence from classical lexicons suggest that the “*alaqah*” has been used by ancient Arabs in association to human reproduction. Given this information, the usage of “*alaqah*” in the Qur'an fails to be miraculous or extra-ordinary and, indeed, is an unwise choice for an allegedly perfect author.

(2) The Yolk-Sac Dilemma



Development of the Yolk Sac.¹⁴²

Hamza Tzortzis makes the claim that the structure of the embryo's yolk-sac can be ignored in order to establish the claim that “*alaqah*” means a leech-like substance. While this point has been made moot by the fact that the definition of “leech-like substance” has been rendered invalid with the establishment of the definition as “blood clot” or “blood”, it would nevertheless be important to examine Hamza's claim for the purpose of completion as well as for the purpose of correcting the misinformation he attempts to spread.

Hamza states the following;¹⁴³

Contemporary commentators argue the embryo only looks leech-like when the yolk sac is removed, therefore the ‘*alaqah*’s description is a misrepresentation of the embryo's appearance at this stage. This contention is misplaced as embryologists consider the yolk sac (also known as the umbilical vesicle) to be an extra-embryonic feature and explain that the yolk sac is formed by extra-embryonic endodermal cells.^{70 71} This fact disproves claims of

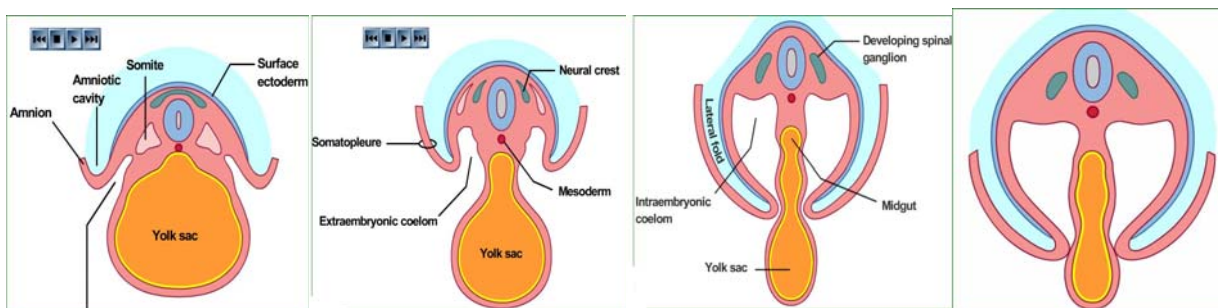
Hamza's states that the yolk-sac can be ignored while describing the structure of the embryo because "embryologists" do not consider the yolk sac to be part of the embryo. However, his evidence for this claim is the following absurd statement;

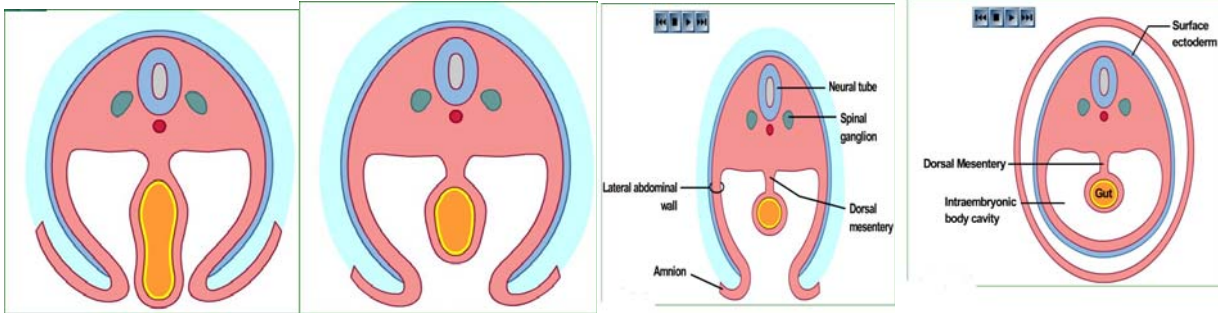
primordial gut.⁷² When the relationship between the embryo and the yolk sac has been described by embryologists, terminology has been used indicating it is an external embryonic feature. For instance, embryologist Bruce Carlson in his book *Human Embryology*

Hamza's evidence for his claim that embryologists do not consider the yolk-sac to be a part of the embryo's structure is that "terminology" has been used that "indicates" it is an "external feature". He then provides quotes from a few books that use the word "yolk-sac" and "embryo" separately.

Hamza's claim is similar to that of an insecure obese man who refers to his bulging abdomen as if it were a separate substance. Yet it would be inaccurate to describe such a person as looking like a fitness model with the reasoning that if one were to ignore all the fat in his body, he would look like a fitness model. A few quotes from plastic surgeons that refer to the fat as a removable part of the body would not in any manner suggest that the fat belly is not a part of the person's structure.

Similarly, a description of the yolk-sac as external or extra-embryonic does not suggest that the yolk-sac is not part of the structure of the embryo. Such terminology may very well be used for the purposes of simplifying the learning of these concepts. However, **determining the structure of an object is not a matter of examining the words used to label the object but rather, it is a matter of examining the actual structure of the object.** In this case, one only needs to acknowledge the fact that the structure of the yolk-sac is continuous with the main frame of the embryo to realize that the yolk-sac is a part of the structure of the embryo. Moreover, part of the yolk sac ultimately forms the lining of the intestinal gut which further demonstrates the fact that ignoring the yolk-sac is arbitrary. The following images from an animation by the Indiana University provide a graphical representation of the ideas conveyed in this point. (<http://www.indiana.edu/~anat550/genanim/latfold/latfold.swf>)¹⁴⁴





Thus, it can be concluded that a description of the shape of the embryo that ignores the structure of the yolk sac is factually incorrect. On a different note, the embryologist PZ Myers has stated that the yolk sac is a part of the embryo.¹⁴⁵

Perhaps it is due to the weakness of Hamza's claim that he decided to include the following caveat;

On a final note, even if the yolk sac is considered as part of the embryo, it doesn't undermine what the Qur'an intends to portray. This is because even with the yolk sac, the embryo still looks worm or leech-like but with the appearance of it sucking or being attached to an external substance [see figure 3].

While this is an acceptable position, it should be noted that the claim made by the apologists for several decades is that the embryo looks *exactly* like a leech. These apologists include *Hamza Tzortzis* himself.¹⁴⁶ Thus, the fact that the yolk-sac is a part of the embryo's structure weakens the claim that the embryo looks *exactly* like a leech.

Nevertheless, it should be remembered that this is a moot point given the problems with the claim that "*alaqah*" means a "leech-like substance". The most accurate definition of "*alaqah*", as used in the Qur'an, is that of a literal "blood clot".

iii. Summary of Refutation

The attempt made by Hamza Tzortzis to claim that the term “*alaqah*” refers to “hanging/ suspended” substance was shown to be a mundane observation apart from being absolutely vague. His attempt to define “*alaqah*” as “suckling blood” was demonstrated as being a weak inference based on arbitrary generalizations. Incidentally, these two definitions, based on a holistic understanding of the Islamic texts, would render the Qur'an as erroneous. The third definition of “leech/ worm like substance” was shown to be the result of a weak uncommon metaphorical usage. This definition also relies on arbitrary comparison which exposes the lack of objectivity in Hamza's explanations. It was also demonstrated that ignoring the structure of the yolk sac provides an inaccurate description of the embryo's structure. Finally, Hamza's attempt to present the definition of “blood clot” as “something resembling a blood clot” was shown to contain the same difficulty of using a weak uncommon metaphor. It was also shown that the embryo is not “something that resembles a blood clot.” Furthermore, the accurate meaning of “*alaqah*” was established as literal “blood” or “clotted blood”. This was based on the following factors; 1) Scholarly consensus, 2) Linguistic consistency, 3) Historical consistency and 4) Inaccuracy of other contending definitions. The other definitions lack these factors which further demonstrates that the definition of a literal “blood clot provides the most accurate and coherent understanding of Qur'an's use of “*alaqah*”. Furthermore, it should be deemed unwise for an intelligent person, let alone an omniscient being, to use a word such as “*alaqah*” to describe a biological stage when the same word carries a literal biological meaning (blood clot) that conflicts with reality as well as the fact that the cognates of the same word were used among the Arabs to refer to incorrect notions about conception. Thus, one can conclude that the Qur'an is factually incorrect in its description of embryology.

5. A Lump of Flesh (Mudghah)



Transliteration: Fa-Khalaqna al-Alaqah **Mudgha**
Translation: then We made the clot into **a lump of flesh**

i. Summary of Hamza's claims

1. The term “*mudghah*” used in the Qur'an means “to chew, mastication, chewing, to be chewed”, “a small piece of meat”, embryo becoming “flesh”, “something that teeth have chewed and left visible marks on” and “marks that change in the process of chewing due to the repetitive act.”
2. The meanings “to be chewed” and “something that teeth have chewed and left visible marks on” refer to the development of somites during the 4th week.¹⁴⁷
3. The meaning “a small piece of meat” combined with verse 22:5 (which has the words “*mudghah*, formed and unformed”) refer to “the organogenetic period”.
4. The term “*Mudghah*” or “chewed substance” is accurately describes the embryo.¹⁴⁸

ii. Refutation of Hamza's claims

There are few instances where one is led into disbelief by the actions of certain individuals. One such instance is Hamza Tzortzis' attempt to claim that a word with the meaning “**piece of meat**” could possibly have any scientific significance. That is to say, a word that could not be made more mundane and meaningless is convoluted to the point where one dares to even state that it can refer to various technical stages in Human development. The most pragmatic response that such a pretentious claim deserves is that of disregard. However, such a righteous response would deprive one of a unique opportunity to witness the level of idiocy that certain adults are willing to engage in.

(1) Misrepresentation of the meaning of “mudghah”

Verse 23:14 states “we made the clot (*alaqata*) a lump of flesh (*mudghatan*)”. The following is Hamza's “analysis” of the term “*mudghah*”;

The next stage of human development defined in the Qur'an is *mudghah*. This term means to chew, mastication, chewing, to be chewed, and a small piece of meat.^{77 78} It also describes the embryo after it passes to another stage and becomes flesh.⁷⁹ Other meanings include something that teeth have chewed and left visible marks on; and marks that change in the process of chewing due to the repetitive act.⁸⁰ The *mudghah* stage is elaborated on further, elsewhere in the Qur'an:

Hamza provides 8 definitions for the term “*mudghah*”. They are;

1. To chew.	5. A small piece of meat.	7. “Something that teeth have chewed and left visible marks on”
2. Mastication.	6. Embryo	8. “Marks that change in the process of chewing due to the repetitive act”
3. Chewing		
4. To be chewed.		

The definitions provided by Hamza for the term “*mudghah*” can be divided into 3 categories. They are, a) **Inaccurate**, b) **Accurate** and c) **Incredibly Absurd**.

(a) **Inaccurate definitions of *Mudghah***

The definitions 1) “**to chew**”, 2) **mastication**, 3) **chewing** and 4) “**to be chewed**” fall under the category of inaccurate definitions. These definitions were taken from the *The Hans Wehr Dictionary of Modern Written Arabic*. Definitions 1, 2 and 3 were taken from the following statements in *The Hans Wehr Dictionary*;¹⁴⁹

<p>مضغ <i>madāḡa</i> a u (<i>madḡ</i>) to chew (ا s.th.) مضغ الكلام (<i>kalām</i>) to slur, speak indistinctly</p>	<p>مضغ <i>madḡ</i> chewing, mastication</p>
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These three definitions are in reality the definitions of certain cognate terms of “*mudghah*” such as “*madaga*” and “*madḡ*”. This is a repetition of the pattern observed in the section “*Alaqah*” wherein Hamza pretends that a term is synonymous with all of its cognates. This is the equivalent of claiming the term “hanger” means “to hang” or “hanging” or “hanged/ lynched” or “hangout” etc., when in fact the word “hanger” does not carry such meanings. However, since they are closely related, a non-English speaker can be easily deceived to believe that these words are synonymous with each other. Therein lies the dishonesty of Hamza Tzortzis as he attempts to deceive a generally non-Arabic speaking audience with the claim that “*mudghah*” (a term which merely means a small piece of meat) also means “to chew”, “chewing” etc.

Given that this is a fairly simple concept and given that Hamza has repeatedly displayed his misrepresentation of this concept, one can only reasonably assume that Hamza is being intentionally dishonest. Nevertheless, the first 3 definitions provided by Hamza should be rejected as they are inaccurate. The next definition given by Hamza is 4) “to be chewed”. There are certain instances when another’s blatant display of incompetence becomes painful to bear. This is such an instance. Hamza derived this definition from the entry for “*mudghah*” in *The Hans Wehr Dictionary* which states the following;

<p>مضغة <i>mudḡa</i> pl. مضغ <i>mudāḡ</i> s.th. to be chewed; bite, bit, morsel; small chunk</p>

Hamza chose to define “*mudghah*” as “to be chewed” by ignoring the abbreviation “s.th.” preceding the words “to be chewed”. In *The Hans Wehr Dictionary*, the abbreviation “s.th.” stands for “something”;¹⁵⁰

s.th.	something
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Therefore, the actual definition given by *The Hans Wehr Dictionary* is not “to be chewed” but “**something to be chewed**” which once again refers to the idea of a “a small piece of meat”. His misquoted definition, “to be chewed”, is grossly misleading because an impression is given that “*mudghah*” is an adjective to describe something that is in a state of having been chewed up. The actual definition is that it is a noun for something that is intended or suitable for chewing (such as a small “piece of meat”).

As the next section explains, Hamza uses the misquoted meaning to justify his claims about somites. For an analogy, one might describe a match as “something to be lit” but by omitting the first word (“something”) and merely quoting the words “To be lit” as the definition of “match”, it would falsely suggest that “match” is an adjective for describing something that is alight.

Thus, the first 4 definitions provided by Hamza as well as any additional arguments built on these definitions should be rejected due to their inaccuracy. One can only sigh in dejection at the sight of such incompetence from a man with the title of “Senior lecturer and researcher.”

(b) Accurate definitions of *Mudghah*

The definitions 5) “a piece of meat” and 6) “embryo” are the accurate ones provided by Hamza. They have been derived from Lane’s lexicon¹⁵¹ and *The Hans Wehr Dictionary*. They define “*mudghah*” as follows;

مَضْغ

مُضْغَةٌ A piece, or bit, of flesh (T, S, K), &c.: (T, K:) or a morsel, or gobbet, of flesh, i.e. a piece of flesh such as a man puts into his mouth: (Khálid Ibn-Jembeh, TA:) or as much as is chewed [at once]: (Mṣb:) and such as the heart, and the tongue, of a man: (TA:) and a foetus when it has become like a lump of flesh: see Kur. xxii. 5; and see خَلِيقٌ.

1. Lane's Lexicon on “*mudghah*”

مَضْغَة *mudḡa* pl. مَضْغ *mudāḡ* s.th. to be chewed; bite, bit, morsel; small chunk of meat; ○ embryo; ○ chewing gum | مَضْغَة طَبِيَّة (ṭayyiba) titbit; جَمَلَة مَضْغَة (ja‘alahū *mudḡatan*) to make s.o. the talk of the town, send tongues wagging about s.o.

2. Hans Wehr Dictionary on “*mudghah*”

The definition “piece of meat” accurately conveys the meaning of “*mudghah*”. The idea is that of a small size of meat or flesh that can be placed in the mouth for chewing at once. Given the context of the Quran, the verse 23:14 would be stating that a blood clot has become a small piece of flesh.

Furthermore, one can also find this word used by Muhammad to mean a small piece of flesh while referring to the heart. This is stated in the following hadith in **Sahih Bukhari Vol. 1, Book 2, Hadith 50**¹⁵² (also found in Sahih Muslim¹⁵³);

يُؤَاقِعُهُ. أَلَا وَإِنَّ لِكُلِّ مَلِكٍ حِمَى، أَلَا إِنَّ حِمَى اللَّهِ فِي أَرْضِهِ مَحْرَمَةٌ، أَلَا وَإِنَّ فِي الْجَسَدِ مُضْغَةً إِذَا صَلَحَتْ صَلَحَ الْجَسَدُ كُلُّهُ، وَإِذَا فَسَدَتْ فَسَدَ الْجَسَدُ كُلُّهُ. أَلَا وَهِيَ الْقُلْبُ."

Translation: "There is a *mudghah* in the body if it becomes good the whole body becomes good but if it gets spoilt the whole body gets spoilt and that is the heart."

Muhammad refers to the heart as a "*mudghah*". He also referred to the embryo as a "*mudghah*". Given this hadith, the term "*mudghah*" can be understood to mean "flesh" in its vaguest sense. The usage is much similar to describing a human being as "a bag of flesh and bones" etc. In fact, several classical Islamic scholars, such as al-Tabari,¹⁵⁴ al-Razi,¹⁵⁵ al-Qurtubi,¹⁵⁶ Ibn Kathir¹⁵⁷ etc have also defined "*mudghah*" as "a piece of flesh" Hamza's attempt to claim that "*mudghah*" refers to some specific detail in human development would be as absurd as someone claiming the phrase, "the bag of flesh and bones" is conveying some specific anatomical details.

NOTE: According to the Hadith above, Muhammad is discussing permitted and prohibited actions and behaviors. In this context, Muhammad also says that the heart is responsible for the good and bad behavior of a person. This incorrect view of the mind goes as far back as the erroneous views of the Ancient Greek philosopher Aristotle. However, Ancient Greek physicians such as Hippocrates and Galen had accurately stated that the organ of reason is in fact the brain.¹⁵⁸ Muhammad seemed to have gone for the incorrect information and consequently even medieval Islamic scholars such as Ibn Qayyim stated that the heart is the seat of reason and not the brain, based on the Quran and Hadith.¹⁵⁹

(c) Incredibly Absurd definitions of *Mudghah*

The definitions 7) "something that teeth have chewed and left visible marks on" and 8) "marks that change in the process of chewing due to the repetitive act" are among the most laughable statements in Hamza's paper. Quite clearly, these definitions are not found in Lane's lexicon or *The Hans Wehr Dictionary* (quoted above in its entirety). Neither are they found in *Lisan al-Arab*. To the contrary, these ludicrous definitions were taken from the mouths of other Islamic apologists,¹⁶⁰

¹⁶⁰ <http://www.elnaggarzr.com/en/main.php?id=94> retrieved 8 September 2011, 23:07.

The website is run by a person named Zaghloul el-Naggar who constantly uses fallacious reasoning, inaccurate definitions etc to fit modern scientific ideas into the Qur'an. El-Naggar himself provides no sources for these supposed definitions of "*mudghah*" and given that the actual academic dictionaries do not

have such definitions, these definitions and any additional arguments built on these definitions can be rightfully dismissed as **fabrications**.

(2) Pointless and weak inferences

Hamza states the following regarding the term “*mudghah*”;

Taking a lexical approach to the interpretation of the word, this stage deals with the 4th week, when somites begin to develop and shift their position to surround the neural tube and notochord. The appearance of the embryo at this stage corresponds with the meaning: ‘to be chewed’ and ‘something that teeth have chewed and left visible marks on’ [see **Figures**

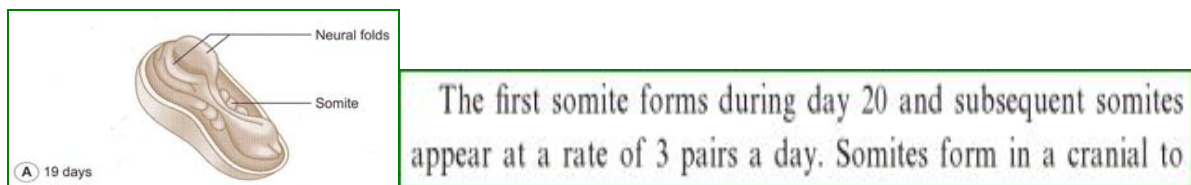
Hamza makes the claim that meanings such as 4) to be chewed and 7) “something that teeth have chewed and left visible marks on” refer to development of the somites. This claim is refuted by the fact that the two definitions upon which the claim rests were found to be inaccurate or invented (as discussed in the previous refutation point). Thus, this claim by Hamza is pointless.

Despite using definitions that are wrong and fabricated, Hamza still manages to be incompetent in justifying his claim that the meanings given for “*mudghah*” correspond to somite development. His claim suffers 2 very serious problems; **a) Inconsistency** and **b) arbitrary and inaccurate inference**.

(a) Inconsistency

Hamza’s claim that the term “*mudghah*” refers to the development of somites is inconsistent with the information he provides in his paper. Verse 23:14 from the Qur’an states, “we made the clot (*alaqah*) a lump of flesh (*mudghah*)”. From this verse as well as Hadiths from Muhammad, it is clear that the “*mudghah*” occurs after “*alaqah*”.

Although it was demonstrated that “*alaqah*” actually refers to a non-existent clot of blood, it is worth noting that accepting Hamza’s inaccurate interpretations for “*alaqah*” and “*mudghah*” would ultimately contradict reality as a holistic understanding of Hamza’s paper reveals that he fails to be consistent. The inconsistency result from Hamza’s claim that “*mudghah*” refers to the development of the somites. However somites start developing on the nineteenth¹⁶¹ or twentieth day¹⁶²;



According to Hamza’s interpretations, “*alaqah*” is the embryo between day 24 and 30 during which it looks like a worm¹⁶³ and “*mudghah*” refers to the embryo

while somite development which starts around the 20th day. Yet according to the Qur'an and hadith, “*alaqah*” appears before “*mudghah*”. Thus Hamza and similar apologists are faced with a dilemma whereby their fantastical, yet unjustified, re-interpretations are ultimately inconsistent with the Qur'an and reality.

(b) Arbitrary and Inaccurate Inference

Hamza's claim that the term “*mudghah*” refers to the stage of somite development rests on two factors; 1) the definition, “something that teeth have chewed and left visible marks on” and 2) somites are like teeth marks or bite marks on the flesh.

However, Hamza has no evidence for the claim that “*mudghah*” means “a piece of meat that has actually been chewed”. The only legitimate definition he has is that of a piece of meat “to be chewed”. Of course a “chewable” piece of meat does not entail that it is already chewed or that the word can only be used if it has been chewed; Such information is not included in the meaning of *mudghah*, yet that is what Hamza needs it to mean. Given that the first factor is false, it thereby renders Hamza's entire argument regarding “*mudghah*” as wrong. Nevertheless, it would be interesting to examine the second factor i.e. Hamza's inference.

Is it valid to infer the embryonic stage during somite development from Hamza's invented definition, “something that teeth have chewed and left visible marks on.” Hamza's justification for this inference is that the somites have the appearance of teeth-marks left on something. If such types of reasoning are considered valid, then it would be more accurate to infer that somites would appear as indentations on the embryo since teeth marks appear as indentations. However, somites are not indentations but they appear as protrusions.

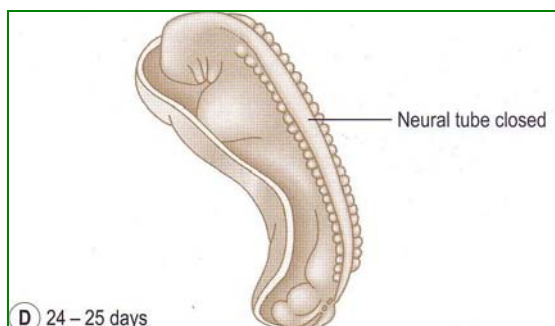


Figure 3. Somites as protrusions projecting out of the skin.¹⁶¹



Figure 4. Teeth marks as indentations in the skin.

If Hamza's reasoning is valid, then it would also be accurate to say that somites are indentations like bite-marks which would once again render the Quran as erroneous. Thus, apart from the fact that Hamza's claim was built on inaccurate and invented definitions, his claims would remain unjustified and false even if his definitions were accurate. One can only remain speechless at Hamza's consistent display of ineptitude.

(3) More Pointless and Weak Inferences

Hamza states the following regarding the term “*mudghah*”;

~~process of chewing due to the repetitive act.~~⁶⁰ The *mudghah* stage is elaborated on further, elsewhere in the Qur'an:

then from a fleshy lump (*mudghah*), formed and unformed.⁶¹

The Arabic word used here for ‘formed’ is *mukhallqah* which can also mean ‘shaped’ or ‘moulded’.⁶²

Hamza quotes from the Qur'anic verse 22:5 the following phrase, “*mudghah*, formed and unformed”. From these four words, he arrives at the following conclusion;

~~This too is an accurate description of the embryo's appearance at this stage.~~ Interestingly, the quranic explanation of *mudghah* as being “formed and unformed”, can refer to the organogenetic period, during which all the main organs have begun to develop but are not yet fully formed.⁶⁴ This period also occurs at around the 4th week.

In his typical manner, Hamza provides no justification as to how the four words, “*mudghah*, formed and unformed” refers to “the organogenetic period”. Furthermore, this verse is referring to an intuitively obvious fact about human development. Given that the ancients believed that the human developed from seminal fluid, it would become apparent to anyone at the time that at some point during development, the embryo would be “unformed” similar to the semen and then at another point, be “formed” similar to an infant. This simple idea can also be found in the reputed exegesis of Ibn Kathir;¹⁶⁴

(then from a clot then from a little lump of flesh) if the Nutfah establishes itself in the woman's womb, it stays like that for forty days, then more material is added to it and it changes into a red clot, by the leave of Allah, and it remains like that for forty days. Then it changes and becomes a lump of flesh, like a piece of meat with no form or shape. Then it starts to take on a form and shape, developing a head, arms, chest, stomach, thighs, legs, feet and all its members. Sometimes a woman miscarries before the fetus is formed and sometimes she miscarries after it has formed. As Allah says:

Furthermore, the claim that the “*mudghah*” refers to the “organogenetic period” would once again be inconsistent with Hamza’s conclusions, the same way the claim that “*mudghah*” refers to “somite development” was inconsistent. The organogenetic period begins in the 3rd week and continues till the 8th week;

As a reminder, according to Hamza the previous “stage” “*alaqah*” can be the 28th day embryo. Yet “*mudghah*”, which succeeds “*alaqah*” according to the Qur'an and Hadith, would begin around the 13th day if it were to refer to “the organogenetic period”;¹⁶⁵

easily disturbed during the organogenetic period – the stage of formation and development of the organs – especially between days 13 and 60. Although the embryo is

Thus, Hamza's conclusions are shown to contradict each other when examined with a holistic understanding of the Islamic texts, embryological facts and Hamza's interpretations.

(4) Arbitrary Accuracies

Hamza states the following regarding the accuracy of the term "*mudghah*";

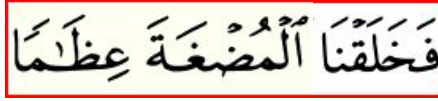
An argument raised by critics concerning the *mudghah* stage is that a chewed piece of meat or a lump of flesh does not resemble the embryo at any stage described by modern embryology. In responding to this, it is necessary to clarify what constitutes a 'chewed piece of flesh'. It includes, not just mastication, but also something being chewed just once. This maintains the meaning of the word *mudghah* as the bite marks do resemble a piece of meat chewed once. This is highlighted by its other meaning: 'something that teeth have chewed and left visible marks on'.

Hamza attempts to respond to the criticism that the embryo does not resemble "a chewed piece of meat" or "a lump of flesh". He then re-introduces his invented and fabricated definitions. However this is a meaningless claim to begin with given that "a lump of flesh" or "a chewed piece of meat" has no characteristic shape. Thus describing the human or any animal as a "lump of flesh" is only as accurate as describing the "Statue of Liberty" as a "piece of stone". In other words, if the word "*mudghah*" or "lump of flesh" is meant to provide some physical information about human development as suggested by Hamza, then the term fails in its purpose as it is meaningless.

iii. Summary of Refutation

Hamza Tzortzis provided 8 definitions for the term "*mudghah*" of which 4 were inaccurate and another 2 were fabricated and were borrowed from other Islamic apologists instead of consulting Academic dictionaries. Hamza's "scientific interpretations" regarding "*mudghah*" were built on the inaccurate or the fabricated definitions; a fact which by itself provides the grounds for rejecting his claims. Yet, it was also demonstrated that Hamza's "scientific interpretations" lack a holistic understanding of the Islamic texts as well as his own conclusions regarding the other words in the Qur'an as they proved to be inconsistent with each other. Ultimately, the term "*mudghah*" or "lump of flesh" does not provide any useful meanings of facts regarding embryology and thus the term is utterly meaningless.

6. Bones (Idhaam)



Transliteration: Fa-Khalaqna al-Mudgha **Idhaaman**

Translation: then We made the lump **bones**

i. Summary of Hamza's Claims

1. The term “*idhaam*” specifically means “the bones of the hands and feet, or of the arms and legs.
2. “*Idhaam*” refers to “the development of the axial and limb skeleton, occurring around the 5th week.”, “the development of the limbs and the appendicular skeleton”¹⁶⁶
3. The verse does not state that the lump of flesh was completely turned into bones.
4. The usage of the term ‘bone’ (“*idhaam*”) is more accurate than the term ‘cartilage’ (“*ghurdoof*”) to describe this stage.¹⁶⁷

ii. Refutation of Hamza's Claims

(1) Misrepresentation of the meaning of “Idhaam”

Hamza, almost religiously, continues his method of misrepresenting the definitions of the words in question. He states the following regarding the Arabic word, “*idhaam*”;

The next stage in embryonic development (according to the Qur'an) is the creation of *idhaam* from the *mudghah* stage. The word *idhaam* in the Arabic language means bone, and is specifically applied to the bones of the hands and feet, or of the arms and legs of an animal, “upon which is the flesh”.⁸⁵

The word “*idhaam*” has the meaning of “bone” as stated by Hamza. However, he continues to state that the term “*idhaam*” is “specifically applied to the bones of the hands and feet, or of the arms and legs of an animal. The source for this definition is given as the following;¹⁶⁸

⁸⁵ An Arabic-English Lexicon. Librairie Du Liban. 1968. Vol. 5, page 2087.

The source given is that of Lane's lexicon from which one is to assume that the dictionary defines “*idhaam*” specifically as the bones of the arms and legs. However, Lane's lexicon provides a different picture. The following is the entry for “*a'dhm*” (singular of “*idhaam*”) in Lane's lexicon;¹⁶⁹

The **قَصَبٌ** [here meaning *bone*, but properly applied to the bones of the hands and feet, or of the arms and legs,] *of an animal, upon which is the flesh*: (K:) [dim. **عُظْمٌ**:] pl. [of mult.] **عِظَامٌ** (S, Mṣb, K) and **عِظَامَةٌ**, with ة as

Hamza thinks that the lexicon is defining the word “*a’dhm*” when it says in the square brackets, “**but properly applied to the bones of the hands and feet or of the arms and legs**”. Consider taking a closer look;

Lane’s lexicon defines “*a’dhm*” as “The **قَصَبٌ** (“*qasab*”) of an animal”. The dictionary also provides an explanation for what the word **قَصَبٌ** (“*qasab*”) means with regards to “*a’dhm*” using the words, “**here meaning bone**” i.e. the Lane’s lexicon actually defines “*a’dhm*” as the **bone of an animal**. The next phrase about hands and feet, arms and legs, is referring to **قَصَبٌ** (“*qasab*”) and **not “*a’dhm*”**.

This is confirmed when one checks the lexicon’s entry for **قَصَبٌ** (“*qasab*”), which it defines as the bones of the arms and legs, or of the hands and feet.¹⁷⁰

Mṣb. [See also **قَصَبٌ**, in art. **ذُرٌّ**.]) — **قَصَبٌ** also signifies + **Any round and hollow bone [or rather bones]**; (S, O;) it is pl. [or rather a coll. gen. n.] of which **قَصَبَةٌ** is the sing. [or n. un.], this latter signifying **any bone containing marrow**; (M, K;) thus called by way of comparison [to the reed, or cane]. (M.) — And ! **The bones of the يَدَانِ and رِجْلَانِ [i. e. arms and legs, or hands and feet, but here app. meaning the latter], (A,**

Thus the lexicon uses **قَصَبٌ** (“*qasab*”) as a means of defining the word “*adham*”, but clarifies in the square brackets that “*adham*” means bone in general, as distinct from **قَصَبٌ** (“*qasab*”) which means a more specific type of bone. This is the only sensible reading of the lexicon.

Hamza once again uses this opportunity to misrepresent the meaning of the word “*adham*” (pl. “*idhaam*”) by assigning it the meaning of **قَصَبٌ** (“*qasab*”), even after the lexicon specifically and explicitly states that in this context, it simply has the “**meaning bone**.” On a further note, how sensible is it that a word can specifically refer to limb bones as well as all the bones in general? Furthermore, it sounds rather incomplete and inconsistent that the author of the Qur’an would only refer to the development of limb bones while every other word (such as semen, blood clot, piece of meat) is a reference to the embryo as a whole. The Qur’an itself clearly uses *adham* to mean bone in general in other verses such as **2:259** and **23:35**.

Verse 2:259: “...And look at the bones (“*Idhaaman*”) [of this donkey] - how We raise them and then We cover them with flesh...”

Verse 23:35: “Does he promise you that when you have died and become dust and bones (“*Idhaaman*”) that you will be brought forth [once more]?”

Predictably, Hamza’s scientific retrofitting with regards to the term “*idhaam*” as well as the next stage was built entirely on the misrepresented definition. Thus in a similar fashion to many of the other “stages” examined, Hamza’s scientific interpretation of “*idhaam*” can be rejected as they rely on the wrong definition of the word. Nevertheless, his scientific claims are examined for the purpose of completion even though they have been rendered moot.

(2) Suppression of Evidence & Invalid Conclusions

Hamza states the following;

The *‘idhaam* stage pertains to the development of the axial and limb skeleton, occurring around the 5th week. Barry Mitchell and Ram Sharma explain:

Hamza concludes that the single word “bones” refer to the development of the axial and limb skeleton “occurring around **the 5th week.**” However, Hamza has already contradicted the words of Muhammad who stated the embryo is given its bones at some time after the **40th day**. The corresponding hadith is **Sahih Muslim Book 33, Hadith 6393** which states the following;

...When forty nights pass after the semen gets into the womb, Allah sends the angel and gives him shape. Then he creates his sense of hearing, sense of sight, his skin, his flesh, **his bones**, and then says: My Lord, would he be male or female?...¹⁷¹

Suspiciously, Hamza makes no mention of this hadith in his discussion regarding “bones” (“*idhaam*”) and when he did discuss the hadith separately on page 66 of his version 2.1b, the erroneous parts of the hadith were not displayed. Thus it is only reasonable to assume that Hamza has deliberately sought to suppress contradictory evidence from his audience. In either case, it is important to note Hamza’s conclusions regarding the word “bones” are in conflict with a “holistic understanding” of the Islamic texts.

Nonetheless, Hamza’s scientific retrofitting seems half-hearted in this section. The general pattern that can be observed is that he would assert that the term “*idhaam*” refers to ‘X’ and then a relatively irrelevant quote from a science textbook is given. Hamza makes no attempt at providing any justification as to how the word “*idhaam*” can refer to ‘X’.

In this section, Hamza claims that the term “*idhaam*” refers to the formation of a) axial skeleton, b) limb bones and c) appendicular skeleton. (**NOTE:** limb bones

are part of the appendicular skeleton and the purpose behind Hamza's redundancy is not clear).

Before analyzing each of the definitions given by Hamza for the term "*idhaam*", it is worth pointing out the sheer ludicrousness of this discussion. The phrase in the Qur'an simply says that "a lump of flesh is made into bones". Given that the ancients Arabs along with others at the time believed the human baby (with bones inside) was formed from the seminal fluid, it is only a matter of intuition that they would realize at some point during pregnancy, the bones would have to form. The Qur'an is merely stating this obvious idea. Yet, for anyone to take one simple word as "bones" ("*idhaam*") and then to claim that this one word conveys scientific information that needs 3 pages of explanation (as Hamza provides) is absurd to the highest degree.

Nevertheless, the following are Hamza's claims regarding the word "bones" ("*idhaam*").

(a) Axial Skeleton

Hamza states the following;

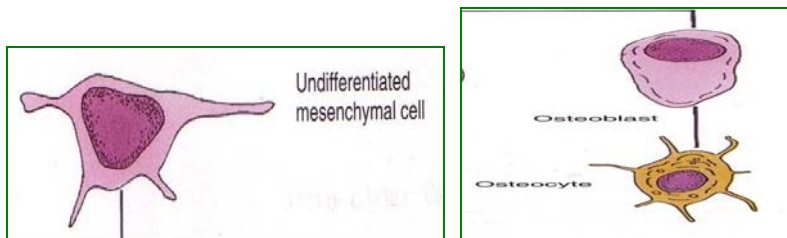
The *idhaam* stage pertains to the development of the axial and limb skeleton, occurring around the 5th week. Barry Mitchell and Ram Sharma explain:

The origin of mesenchymal cells forming the skeletal tissues varies in different regions of the body. Mesenchymal cells forming the axial skeleton arise from the mesodermal somites, whereas the bones of the appendicular skeleton are derived from the somatopleuric mesenchyme of the lateral plate mesoderm. After reaching their destination the mesenchymal cells condense and form models of bones. The subsequent differentiation of mesenchymal cells into chondroblasts or osteoblasts is genetically controlled.⁹⁶

Hamza claims that the word "bones" ("*idhaam*") refers to the development of the axial and limb skeleton around the 5th week and then provide a quote from a science textbook. As stated above, Hamza makes no attempt to justify his claim i.e. he merely asserts that the word "bones" ("*idhaam*") refers to "the development of the axial and limb skeleton" without providing any support for his assertion.

Nevertheless, the more important point to be discussed is the irrelevance of the scientific quote provided. Consider what Hamza has done; he refers to the "origin of mesenchymal cells" in a discussion about the word, "bones". Hamza gives the impression that he believes the "precursors to X" is the same as "X" i.e. he seems to implicitly state that "mesenchymal cells" or maybe "osteoblasts" (precursor cells of bones) are to be included in the definition of "bones" ("*idhaam*").

Such a usage is devoid of any meaning or usage. There is a reason why the word “egg” does not mean “bird” despite “birds” developing from “eggs”. This should be a fairly intuitive idea that it would be absolutely meaningless if an object is liberally defined to include any of its precursors or past forms. Yet Hamza seems to have missed the fairly simple notion that an “egg” is not the same as a “bird” and likewise, “mesenchyme” or “osteoblasts” are not the same as “bones”. Below is an image of mesenchymal cell and osteoblasts; neither of which can be described as “bone”.¹⁷²



Thus, Hamza provides no justification as to why he claims the word “bones” refers to “the development of axial and limb skeleton”.

(b) Limb bones and c) Appendicular skeleton

Hamza states the following regarding the word “bones” (“*idhaam*”);¹⁷³

‘Limb bones’ is the specified meaning of the word ‘*idhaam*’, and therefore can refer to the development of the limb buds which give rise to the development of the limbs and the appendicular skeleton. Barry Mitchell and Ram Sharma elaborate on the formation of the limb and appendicular skeleton:

The appendicular skeleton consists of limb girdles and the bones of the limbs. The bones of the appendicular skeleton develop from mesenchymal condensations which become cartilaginous models.⁵⁷
[See Figure 8]

Hamza begins with the falsified statement that “‘limb bones’ is the specified meaning of the word “*idhaam*”. It was demonstrated in refutation point (1) that this definition provided by Hamza was a misuse of Lane’s lexicon. Thus this claim has been rendered moot.

Nevertheless, a point needs to be made regarding the scientific quote provided by Hamza. Hamza begins by defining “*idhaam*” (falsely) as “limb bones” and then claims it can “therefore refer to the development of the limb buds”. Hamza provides no explanation as to how the word “limb bones” can also refer to “limb buds”. With this example, Hamza repeatedly gives the impression that he confusedly believes that “precursors of X” can be treated as “X”.

In summary, “*idhaam*” neither has the specific meaning of “limb bones” nor does Hamza explain how such a specific definition provides any support for his claim.

However, the awkward fact about the Hamza’s discussion on the word “bones” (“*idhaam*”) is that he is **largely correct**. Ignoring his misrepresentations of the dictionary and his confused notion that “precursors to X” are the same as “X”, Hamza is claiming that the word “bones” (“*idhaam*”) refers to the axial and appendicular skeleton; which is another way of saying that the word “bones” (“*idhaam*”) refers to all the “bones” in ones body.

If all of Hamza’s points boil down to the phrase, “bones are bones” then what was the necessity of discussing axial bones and appendicular bones? What was the necessity of misrepresenting the dictionary and defining “*idhaam*” (bones) as “limb bones”?

A decent guess for the former might be that Hamza’s intention was to impress the lay person by a display of technical terms in biology. Certainly, a sentence with words such as axial, appendicular, mesenchyme etc look more compelling than his un-convoluted conclusion i.e. “bones are bones”. As for the latter, the answer lies in his discussion of the next “stage” (7. *Clothed those Bones with Flesh*)

(3) A better Qur'an?

Following his discussion of the word “*idhaam*” (bones), Hamza responds to two criticisms about the verse in the Qur'an. The first contention is regarding an alleged error in the phrase “*Fa-Khalaqna al-Mudgha Idhaaman.*” Hamza states the following;¹⁷⁴

FROM A LUMP TO BONES?

A common misconception, usually made by those unfamiliar with Arabic, is that this verse can be literally translated as “and We made that lump into bones”. From this, they conclude that this verse is unscientific because a lump of flesh cannot turn into a mass of bones. However, this is based upon a crude understanding of Arabic grammar and the Qur'an's eloquence. This verse, from a grammatical perspective, has the meanings of: “and We made of/from/out of the lump, bones”.

He then quotes three *modern* translations to support his view. The only point to be noted there is that how a translator, especially a modern translator, chose to translate a phrase is hardly authoritative. Hamza should be well aware of the fact that relying on the authority of modern translators is a bad practice (Refer to discussion on “*taraib*” in “*Suppression and Misrepresentation of Conflicting Evidences*”, under section *Nutfah*, page 34).

Nevertheless, it is more important to discuss the contention at hand. The allegation is that the Qur'an states that a lump of flesh is turned entirely into a mass of bones. The authors and collaborators behind this refutation paper have never raised such a contention. Besides, it seems rather nonsensical that anyone would believe that the fetus at some point in the womb appears as nothing but bones. Any sight of a miscarriage would easily have prevented anyone from holding such a belief even in ancient Arabia.

That being said, it is nevertheless important to mention a closely related criticism in that the phrasing in the Qur'an could have been bettered. The phrase consists of three words,

1. *Fa-khalaqna*: Then we made
2. *al-mudghah*: the lump of flesh
3. *idhaam*: bones.

Thus the literal, word for word, meaning is “Then we made the lump of flesh bones”. Based on these words, the interpretation that the Qur'an is saying that flesh turns entirely into bone is a valid one, even though it is nonsensical when examined realistically.

Thus another contention that can be raised is that the phrase could be made less ambiguous by the addition of the word “from” (*min*) i.e. a better phrase in the Qur'an for conveying the intended idea would be, “*Fa-Khalaqna min al-Mudgha Idhaaman*” (Then we made **from** the lump of flesh, bones).

If one were to predict, Hamza's response would be that the original words in the Qur'an also convey the meaning of “from/out of”. This nevertheless does not correct the fact that the word for “from/out of” is **absent** in the original Qur'anic phrase which means that the addition of “from/out of” in translations is only achieved through interpretations. If the preferred translation of this phrase includes the words “from/out of” and if language is considered as a tool for conveying a message clearly then it follows that the quranic phrase would be made clearer, and thus better, if it said, ““*Fa-Khalaqna min al-Mudgha Idhaaman*” (Then we made **from** the lump of flesh, bones).

Nonetheless, this is a minor point that does not need much elucidation. The point to be noted is that the authors and collaborators behind this refutation paper do not hold the view that the Qur'an states that flesh is entirely turned into bones. However, this does not prevent one from holding the view that the phrase in the Qur'an could be improved.

(4) Lack of Accuracy and Specificity

Hamza responds to the second criticism regarding the accuracy of the Qur'an as well. This contention holds that since the embryo has cartilage and not bone

around the 5th week (as specified by Hamza), it would therefore be more accurate for the Qur'an to have used the word for “cartilage” instead of the word for “bone”. Hamza states the following in response;

NOT REAL BONES?

Another contention from commentators is that at this stage there are no real bones. It is argued that the apparent bones are mere cartilage as ossification is incomplete and, therefore, the Qur'an is inaccurate. They further assert that the Arabic term for cartilage, *ghurdoof*¹ should have been used instead of *'idhaam*. Although a valid contention, it is misplaced. The Arabic word for cartilage refers to a type of cartilage that is not a precursor to bones, but rather remains as flexible connective tissue. It is, according to *Lane's Arabic-English Lexicon*:

any soft bone, such as is, or may be eaten and [i.e. the soft or cartilaginous, part,] the firm part that is harder than flesh and softer than bone, of the nose.⁹²

Hamza responds by stating that the Arabic term for cartilage, “*ghurdoof*” refers to “a type of cartilage that is not a precursor to bones.” Yet, Hamza fails to provide any source for the claim that “*ghurdoof*” is not equivalent to the word cartilage whether it is a precursor to bone or not. Neither are there any sources provided by Hamza for his claim that permanent cartilage and the cartilaginous model of bones are different types. In fact, Dr. Ranieri Cancedda, a cell biologist specialized in the biology of cartilage and bone¹⁷⁵, states the following;¹⁷⁶

In the body, hyaline cartilage is found on joint surfaces (articular cartilage), in the few remaining cartilaginous bones (permanent cartilage), and in the cartilaginous models of vertebral column, pelvis, and limb bones that are formed during embryogenesis and subsequently replaced by bone. After

Thus, the permanent cartilage and the cartilaginous model of bones are made from the same kind of cartilage i.e. hyaline cartilage. Regardless, the definition he quotes from Lane's lexicon defines “*ghurdoof*” as “**any soft bone**”. The following is the entry for “*ghurdoof*” provided by Lane's lexicon;¹⁷⁷

غُرْضُوفٌ
 غُرْضُوفٌ and غُرْضُوفٌ [A cartilage:] any soft bone, (T, S, * O, K, TA,) such as is, or may be, eaten: (T, O, K, TA:) pl. غَرَضِيفٌ (O, K, TA) and غَضَارِيفٌ. (O, TA.) The مَآرِنُ (O, K, TA) i. e. [the soft, or cartilaginous, part,] the firm part that is harder than flesh and softer than bone, (TA,) of the nose, (O, K, TA,) is thus

Lane's lexicon defines the word as “a cartilage” (Hamza for suspicious reasons left this out when he quoted Lane's lexicon). Therefore, Hamza's claim that the term “*ghurdoof*” (pl. “*gharadeef*”) can only refer to “a type of cartilage” that does not become bone is his own invention.

After inventing his definition for “*ghurdoof*”, Hamza then states the following;

Conversely, the word *‘idhaam* encompasses the cartilaginous form of the bones as the skeletal framework is put in place. Furthermore, the use of the word *‘idhaam* is more accurate because it also carries the meaning of “bone, but properly applied to the bones of the hands and feet, or of the arms and legs, of an animal, upon which is the flesh.”³³ Since flesh - in other words muscles and tendons - is subsequently formed around the limb bones of the developing human, the use of the word *‘idhaam* is more apt as it encompasses the description of limb bones that have flesh upon them (see next stage).

Notice how Hamza repeats the misrepresented definition of *Idhaam*. At this point, that part of the paragraph can be righteously ignored

Hamza begins with the claim that the word “*idhaam*” encompasses “the cartilaginous form of the bones”. Yet, in his usual manner, no sources are given as to why this is the case. Perhaps, Hamza is under the impression that cartilage is a “form” of the bone. This is incorrect as cartilage and bone are distinct connective tissues. As the biologist, Elaine Marieb explains;¹⁷⁸

harden, a process called calcification. Note, however, that calcified cartilage is *not* bone; cartilage and bone are always distinct tissues.

The fact of the matter is that the embryo initially has a skeleton made of cartilage as explained by the biologist, David Chiras;¹⁷⁹

cartilage. In embryonic development, the first skeleton is hyaline cartilage, much of which is later converted to bone.

The cartilage skeleton is then resorbed and replaced by bone. As anatomists Leslie Gartner and James Hiatt explain;¹⁸⁰

Most of the long and short bones of the body develop by **endochondral bone formation**. This type of bone formation occurs in two steps: (1) a miniature hyaline cartilage model is formed, and (2) the cartilage model continues to grow and serves as a structural scaffold for bone development, is resorbed, and is replaced by bone. Table 7-3 summarizes the

Additionally, the cartilage only begins to ossify beginning in the 9th week. This fact is explained by the anatomist, Mary Barbe in the following manner;¹⁸¹

processes. Chondrification spreads until a cartilage model of the vertebrae is formed. The conversion of the cartilage model into bone (*ossification*) begins in embryonic week 9 and continues until year 25 of life.

In light of the above information, Hamza's claim that "the use of the word *"idhaam"* is more accurate" than using the word *"ghurdoof"* to describe the skeletal structure of the embryo in its 5th week is hardly compelling. If in reality a 5-week old embryo has a cartilage skeleton and if specificity in language is considered as a tool for conveying information accurately then it follows that the quranic phrase would be more accurate, and thus better, if it said, *"Fa-Khalaqna min al-Mudgha gharadeefan"* (Then we made **from** the lump of flesh, **cartilages**)

On a side note, Hamza makes a curiously absurd argument in his final remarks about this contention. After quoting a science textbook that states that ossification continues even after birth, Hamza states the following;

From this perspective, it would be a medical absurdity to assume newborns or young teenagers do not have bones simply because they require ossification, especially since ossification completes at the end of the growth-spurt of puberty. Nevertheless, if this were the case, and we were to consider this stage as being 'boneless', the connotations of the word *"idhaam"* allow for an all-encompassing interpretation because the "cartilaginous models of the various bones"⁹⁶ are included in its meaning.

It is unclear as to what the purpose of the non-sequitur of "boneless" babies is. This is patently absurd as the majority of the bones in newborn's body have already ossified. Perhaps, Hamza is trying to claim that since a newborn's body is said to have "bones" despite continued ossification, it would also be accurate to refer to the "cartilaginous skeleton" of the 5-week embryo as "bones". If this is supposed to be Hamza's point, then this is miserably fallacious. As stated before, the skeleton of a newborn consists mostly of ossified bone with relatively little cartilage. This case is entirely different from the skeleton of a 5-week embryo which consists mostly of cartilage and has absolutely no "bone" in its body. Therefore, while it is absurd to claim babies are boneless, it is only accurate to claim that the 5-week embryo has cartilaginous skeleton instead of bone. Nevertheless, at the end of the paragraph, Hamza repeats his unjustified assertion that the word *"idhaam"* includes the meaning of "cartilaginous models." However, the point to be noted is that even if Hamza's unjustified assertion was true, it is still irrelevant to the fact that the word for cartilage is a better fit for the verse.

In summary, if the term *"idhaam"* (bones) refers to a 5-week old embryo, then it is undeniable that the term *"gharadeef"* (cartilages) would be more apt in conveying a more accurate picture of the embryo. Thus, in light of the information in the last two refutation points, a better phrase in the Qur'an would have been, *"Fa-Khalaqna min al-Mudgha gharadeefan"* (Then we made **from** the lump of flesh, **cartilages**).

However, there is a certain degree of difficulty in this discussion of “*idhaam*”. Hamza’s specific claim is that “*idhaam*” refers to the “bones” in a 5 week embryo. Thus, the corresponding refutation of his claims also considers “*idhaam*” as referring to the “bones” in the 5 week embryo. This was primarily done by Hamza in order to establish his points in the next stage (**7. Clothed the Bones with Flesh**). Therein lies the difficulty as there is nothing in the Qur’an that indicates that this word is a reference to the embryo in its 5th week. This is merely Hamza’s interpretation which holds no authority among Muslims or non-Muslims and thus can be rejected by anyone. In light of this, it needs to be understood that refutation point (4) is specific to Hamza’s interpretation and does not apply to the Qur’anic phrase in general, especially given that the phrase in the Qur’an merely has a single word, “bones” (“*idhaam*”) which offers no falsifiable details. In fact, nothing in the Qur’an seems to provide details or information regarding embryology that is of any recognizable significance.

iii. Summary of Refutation

Hamza Tzortsis was exposed in his misrepresentation of Lane’s lexicon by which he attempted to assign the meaning of the word **قَصَب** (“*qasab*”) to the word “*idhaam*” (bones). Hamza then claimed that the term “*idhaam*” refers to axial and appendicular skeleton which was then shown to be a pretentious way of saying “bones are bones”. Hamza’s responses to two criticisms were shown to be unsuccessful in addressing the ambiguity and accuracy of the phrase in the Qur’an. Overall, it seems pointless to attribute any embryological detail to a single word that merely means “bones”.

7. Clothed the Bones with Flesh (*Fakasawna Idhaama Lahman*)



Transliteration: **Fakasawna al-Idhaama Lahman**

Translation: **then We clothed the bones with flesh**

i. Summary of Hamza's Claims

1. "*Kasawna*" means "to clothe, to dress" etc. "*Idhaam*" means "bone." "*Lahm*" means "flesh, meat". However, these three words put together refer to the "migration and aggregation of the myoblasts which organize into dorsal and ventral muscles muscle [sic] masses surrounding the developing skeleton."¹⁸²
2. The word 'flesh' ("*lahm*") is more accurate than the word 'muscle' ("*adlat*") to describe this stage.
3. "Clothing of the bones with flesh" happens straight after bone development.¹⁸³

ii. Refutation of Hamza's Claims

(1) Absurdly Pompous Interpretation

The phrase in the Qur'an says, "**then we clothed the bones (with) flesh**". It consists of only three words in the Arabic;

- 1) *Fakasawna*: Then we clothed
- 2) *al-Idhaama*: the bones.
- 3) *Lahman*: flesh, meat.

This is merely a poetic way of describing the body. Any person, regardless of the time period he lived in, could look at his body and realize that underneath his skin, there is flesh around the bones. A similar phrase with relatively more details than the Qur'an exists in the Old Testament in the Book of Job, Chapter 10, verse 11, which states;

(KJV) "**Thou hast clothed me with skin and flesh, and hast fenced me with bones and sinews.**"¹⁸⁴

Or using a different translation;

(CEV) "**Then you tied my bones together with muscles and covered them with flesh and skin.**"¹⁸⁵

Even the most uneducated person in the 21st century could poetically refer to their bodies as bones wrapped or clothed in flesh. One would think there is nothing more to this phrase. Of course, then there is the alchemist Tzortzis who claims that the plain Qur'anic phrase, “**then we clothed the bones with flesh**” refers to “the migration and aggregation of the myoblasts which organize into dorsal and ventral muscles muscle [sic] masses surrounding the developing skeleton”

The pompousness of Hamza's claim is absurd beyond imagination that even giving it the slightest of serious thought is an insult to the rationality of every sensible human being. Nevertheless, Hamza's claims will be examined for the purpose of completion as well as for the benefit of anyone unfortunate enough to have fallen for such a poor display of hopeless apologetics.

After defining the word “*kasawna*” (to clothe) and the word “*lahm*” (flesh, meat), Hamza states the following,

The words used in the Qur'an to describe this stage are remarkably consistent with modern embryology. The word *kasauna* denotes the migration and aggregation of the myoblasts which organise into dorsal and ventral muscles muscle masses surrounding the developing skeleton. These physiological developments are illustrated by the meanings that *kasauna* carries, such as: to clothe, to dress, to encase and to cover. The word *lahm* is not just limited to the limb muscles but also applies to the muscles masses surrounding the axial skeleton.

Hamza begins in his usual manner by stating the phrase, “**then we clothed the bones with flesh**” is consistent with modern embryology. He then claims that word “*kasawna*”, which simply means to clothe, to dress etc, refers to “the migration and aggregation of the myoblasts ... surrounding the developing skeleton”. He then claims these “physiological developments are illustrated by the meanings” of “*kasawna*”.

Hamza attempts to conflate the statement “myoblasts migrating and aggregating around the developing skeleton” with the Qur'anic phrase “clothed the bones with flesh.” In order to correlate these two phrases, one would have to assume that; a) clothe = migrate and aggregate, b) bones = developing skeleton and c) flesh = myoblasts (precursor muscle cells)

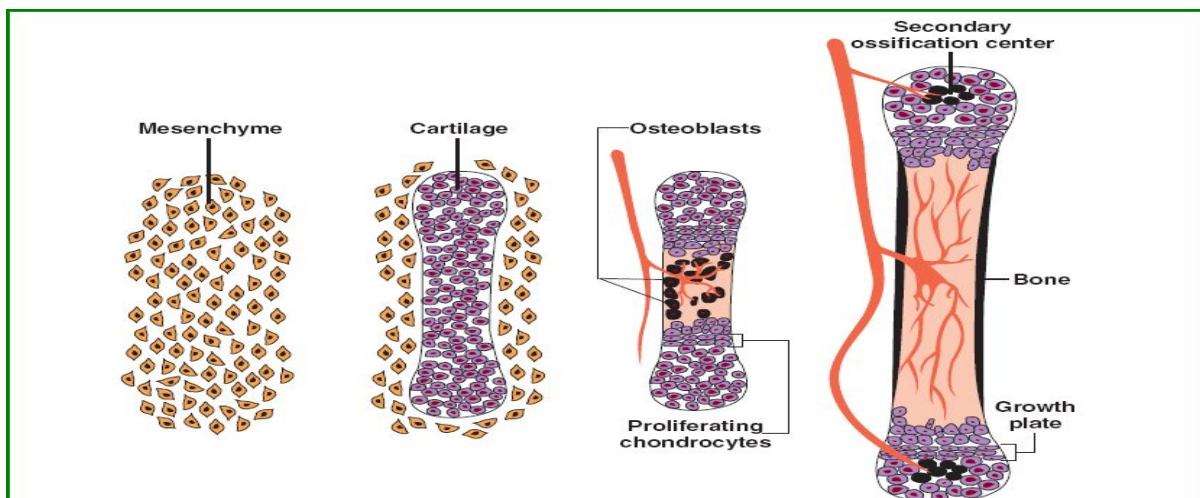
a) clothe = migrate and aggregate – this is obviously absurd. It does not require much elaboration to understand that that dressing or covering an object is not the same as the object moving or multiplying or both. Furthermore, the word “clothe” provides a wrong picture of physiology of bone and muscle development. When a person is clothed, the sequence of events starts with the person being unclothed and then wearing the clothes. Translating this idea into embryological reality, it would mean that the bones would be found without any “flesh” around it. Such a stage does not exist.

Thus, the word “clothe” is not equivalent to the words “migrate and aggregate”. If one insists the word “clothe” refers to the “migration and aggregation of the myoblasts” then the Qur'an would be presenting an erroneous picture of human

development. Nevertheless, one should be reminded again that the idea of “flesh clothing bones” is simply an observable fact and therefore associating it with fantastical interpretations is hardly a parsimonious approach.

b) bones = developing skeleton – this is a repetition of the Hamza’s unjustified assumption that “precursors of X” are the same as “X”. The developing skeleton is made of cartilage which, as stated above, is distinct from bone. Nevertheless, it still remains as a fact that the idea of “flesh clothing bones” is simply an observable fact that anyone could state without any knowledge of myoblasts and cartilaginous skeletons. Thus, Hamza’s interpretation is neither parsimonious nor does he have any evidence to suggest that this is what Muhammad meant.

c) flesh = myoblasts (precursor muscle cells) – Hamza seems to be repeating his unjustified notion that a “precursor of X” is the same as “X”. The word used in the Qur'an is “lahm” which simply means “flesh”. Given, that the term “flesh” is hardly specific, Hamza could very well state that the word can mean any fleshy substance including the precursors to muscles. However, this is also the difficulty for Hamza’s interpretation. If Hamza takes the liberty to arbitrarily claim that the term “flesh” refers to “myoblasts”, then anyone else is equally entitled to state that “flesh” refers to the mesenchymal mass (precursors to bones and muscle). *Langman’s Medical Embryology* provides a graphical representation of the development of skeletal structures;¹⁸⁶



The cartilaginous model develops inside the mesenchymal mass. If one takes the liberty to arbitrarily define “lahm” or “flesh” as any flesh precursors to muscles just as Hamza does, then one could use the same line of reasoning to claim, that the Qur'an is wrong in stating that “bones are clothed in flesh” as the true picture is that the skeleton (“bones”) develops inside the mesenchymal mass (“flesh”).

The point of this exercise was not to claim that the Qur'an is referring to “mesenchyme” and therefore it is in error. Rather, the point was to demonstrate the

inherently arbitrary nature of Hamza's argument. His line of reasoning, due to its lack of objectivity, can also be used to claim that the Qur'an is wrong in its description.

Nevertheless, it should be remembered that the phrase in the Qur'an, "**then we clothed the bones with flesh**" is a statement that could be made by anyone with no knowledge of the detailed embryological information that Hamza unnecessarily discusses.

(2) Strawman and Lack of Specificity

Hamza responds to a certain criticism against the Qur'an in the following manner,¹⁸⁷

Critics of the quranic description of the developing human embryo maintain that the word *lahm* (flesh) is not the most accurate word to use and the word *adlat* (muscle) is more appropriate. This contention is insubstantial because the word *lahm* is far more

The criticism was raised by an individual, who goes by the pseudonym Klingschor, in his video titled, *Hamza Andreas Tzortzis & Co. (& Embryology in the Qur'an) DEBUNKED*.¹⁸⁸ Klingschor made the statement that the word, "*lahm*" means "flesh" and not "muscle" (the Arabic word for which is "*adlat*") This was in direct response to the claim in which Hamza Tzortzis and his colleague specifically defined the word as "muscle". Klingschor was making two points with his statement. 1) correcting Hamza and other apologists in defining "flesh" arbitrarily as muscle and 2) suggest that if the preferred translation of this word is "muscle" and if language is considered as a tool for conveying a message clearly then it follows that the quranic phrase would be made clearer, and thus better, if it said, ""*Fakasawna al-Idhaaman Adlatan*" (Then we clothed the bones in muscle).

However, Hamza makes a response to the criticism without any mention of the original context. In Hamza's paper, he seems to have retracted his initial position that "*lahm*" referred to muscle. If the original claim is withdrawn then it is a matter of common sense that the relevant criticisms no longer apply.

On the other hand, Klingschor's original criticism certainly would evolve as Hamza's arguments change. Hamza's current position, as explained in version 2.1b, is that "*lahm*" can refer to "myoblasts" among other arbitrary definitions. In this the new counter-argument would be that if the preferred translation of this word is "myoblast" and if language is considered as a tool for conveying a message clearly then it follows that the quranic phrase would be made clearer and thus better, if it made a reference to the building blocks of muscles.

Nonetheless, the point that cannot be stressed enough is the fact that all this discussion was done on the pompous interpretations given by Hamza to an extremely banal phrase in the Qur'an; "**then we clothed the bones with flesh.**"

(3) Indulging in Error upon Error

Having made a mess of Klingschor's criticism, Hamza moves on to address the contention raised by another individual, PZ Myers, a professor at the University of Minnesota with areas of expertise in developmental biology and neuroscience.¹⁸⁹ Hamza states the following;¹⁹⁰

Commentators on the quranic description of the developing human embryo claim the Qur'an portrays an inaccurate succession of events with regards to the bones and the clothing of the flesh. They declare that bone and muscle formations occur simultaneously, and that the Qur'an uses the connective particle *fa*, which in the context of the verse, indicates a quick succession of one thing happening after the other. For instance the Qur'an says "We made that lump into bones, and (*fa*) We clothed those bones with flesh".

This view represents a misunderstanding of the linguistic context of the verse. The Qur'an's use of the particle *fa* is not in the context of creating; rather, it is in the context of clothing the bones with flesh. The Qur'an does not specify when the flesh (or muscles) were formed;

The statement "they declare that bone and muscle formation occur simultaneously" is a reference to the following statements made by PZ Myers when he was confronted (or ambushed) by Hamza and others;

"the differentiation of mesoderm, then within the mesoderm, there is segregation into embryonic mesenchyme then cartilaginous centers that will form bones and these are forming "simultaneously" with each other."¹⁹¹

(A larger excerpt of the conversation can be found in Appendix B)

Much like the case with Klingschor's criticism, PZ Myers' contention is presented devoid of its original context. The fact of the matter is that Hamza and his colleague, Adnan had informed PZ Myers that the Qur'an **specifically** states that the bones form first and then the muscles form. This of course is absurd and erroneous. Adnan's answer suggested to everyone that he thought that at some point there would be separate bones in womb and only after its formation will the flesh start forming. PZ Myers answer was in response to the ignorance displayed by the senior researchers of the Islamic Education & Research Academy.

What PZ Myers described was the fact that bones, muscles etc develop and differentiate parallel to each other from the mesenchymal mass and that one does not wait for the other to complete formation as the words of Adnan would suggest. PZ Myers' response was without doubt accurate in providing a generalized description of the differentiation of specialized connective tissues. The development of the muscles and bones from the mesenchymal cells do occur simultaneously.

In an act of dishonesty, Hamza takes away the context of their embarrassing encounter, and thus misrepresenting the contention raised by PZ Myers. Here Hamza states that **"The Qur'an does not specify when the flesh (or muscles) were formed."** This may very well be true but it does not change the fact that Hamza and

his colleague **specifically** informed PZ Myers that the Qur'an "absolutely" says that the bones form first and then the muscles. PZ Myers statement was in response to Hamza's and his colleague's retracted statement.

Nevertheless, Hamza's paper would make a turn for the worst when he begins to claim that bones are formed before muscle despite the education he received from PZ Myers. Hamza states the following;

the bones with flesh. The Qur'an does not specify when the flesh (or muscles) were formed; it only specifies when the clothing of the limb bones with flesh happens. This, as John Allan and Beverley Kramer explain, is straight after:

Soon after the cartilaginous models of the bones have been established, the myogenic cells, which have now become myoblasts, aggregate to form muscle masses on the ventral and dorsal aspects of the limbs.¹⁰⁴

This is a repetition of the Hamza's argument that has been discussed in refutation point 1 (**1. Absurdly Pompous Interpretation**). Hamza continues his arbitrary and erroneous equation of "X" with "precursors to X". He then makes the following statement;

A significant clarification to make is that this contention, incorrect as it is, is also not based on a consensus amongst embryologists. According to many embryologists limb bone and muscle formation are not simultaneous. For example embryologist Bruce Carlson confirms that the limb bones are formed before the limb muscles:

The skeleton is the first major tissue of the limb to show overt signs of differentiation.¹⁰⁵

First and foremost, Hamza states that the contention, i.e. PZ Myers' statement that bones and muscles develop simultaneously, is incorrect. It is rather discouraging that Hamza, after having written an entire paper on embryology, would make such blatantly ignorant statements. Thus, it is worth stepping back and observing the rock bottom at which Hamza stands.

Hamza claims that "**the limb bones are formed before the limb muscles**" and the only evidence he provides to substantiate this very specific claim is the statement, "The skeleton is the first major tissue of the limb to show overt signs of differentiation." In other words, the only evidence for Hamza's claim that limb bones form before limb muscles, is a statement that makes no reference to either bone or muscle.

Nevertheless, Hamza's quote is referring to chondrification of condensed mesenchyme, i.e. the differentiation of mesenchymal cells into chondrocytes, which form cartilage, **not bone**. Even worse, Hamza seems to think that the initial, overt sign of differentiation into a particular type of cell is equivalent to saying that the eventual structure has formed. As even Hamza should know, formation of cartilage

models and muscle are processes taking place over an extended and overlapping period of time.

Moreover, while Hamza has no choice but to accept the indisputable fact that development of bones and flesh form in parallel, he still wants to find a way to present anything that fits the phrase “clothed the bones with flesh” as occurring after the formation of the very liberally defined “bones”. Thus, he displays carefully selected textbook quotes to suggest that the migration of myoblasts from the somitic mesoderm into the limb bud occurs after the cartilaginous models have reached a stage of development such that they could in some sense be called bones. In doing so Hamza creates a very misleading impression of limb development.

The world-renowned medical scientist, Professor Peter K. Law states the following regarding the musculoskeletal development;¹⁹²

Within the somites are uncommitted mitotic stem cells capable of giving rise to muscle, bone, cartilage, blood, lymphatic, fat and connective tissues (Figure 1). The commitment to being myogenic occurs early on since myoblasts, as these cells are called, are found in the limb buds at 26 days of gestation. Satellite cells which are myoblast reserves in adult muscles contain actin-like filaments in their cytoplasm. Such lineage determination is influenced by embryonic induction and irreversible gene expression [2].

Myoblasts or the precursor myogenic cells are already found in the limb buds during the 26th day after fertilization. This fact is also confirmed by the biologist Robert Galjaard who states the following regarding limb development;¹⁹³

Before stage 12 (26 days postfertilization) lateral plate mesoderm cells become specified into presumptive limb fields at circumscribed rostral and caudal positions along the main body axis of the embryo (Hogan 1999; Niswander 2003). Cells at the rostral presumptive limb fields adopt an identity of upper limbs, whereas those at caudal positions will form the lower limbs. In the presumptive limb fields, the high proliferation rate of the undifferentiated mesenchyme and the overlying ectoderm is maintained, while cells of the interlimb flank show a diminished proliferation rate (Johnson and Tabin 1997). This results into the appearance of paired forelimb buds at stage 12 (ca. 26 days) (O’Rahilly and Gardner 1975). At this stage myogenic precursors populate the early limb mesenchyme.

Thus, at the Carnegie stage 12 or around the 26th day, the limb buds are populated by the myogenic precursors. Robert Galjaard also discusses the development of the cartilaginous model of the bone. He states;

(O’Rahilly and Gardner 1975; Rodriguez-Niedenfuhr *et al.* 2001). The elongating limb gradually flattens along its Dorsal-Ventral (D/V) axis and takes a paddle shape form during stage 16 (ca. 37 days). At that time, the distal nerves are recognizable up to the future elbow. The anterior nerve will become the radial nerve, whereas the posterior nerve will develop into the median and musculocutaneous nerves. The mesenchymal condensations of the humerus, radius and ulna can be discerned at this stage. The humerus chondrifies shortly afterwards.

In the Carnegie stage 16 or around the 37th day, the condensation of the mesenchymal mass is visible. This is only beginning for the chondrification process or the process of the mesenchyme converting into cartilage. Thus, the myoblasts or the myogenic precursors are present in the limb bud more than 10 days **before** the process of chondrification even begins. Galjaard also states the following regarding the ossification process or the process of bone formation;

At stage 17 (ca. 41 days) the radius starts to chondrify followed by the ulna and the metacarpalia and finger rays are formed. The nerves are now recognizable up to the hand plate. Myoblasts have grouped themselves into a dorsal and ventral muscle mass, from which the proximal mass in the upper arm becomes separated into distinct muscles at stage 18 (ca. 44 days). By then the AER and ZPA have gone into regression. The vascular pattern is well differentiated into ulnar, median and interosseous arteries. The first signs of joint formation in the future metacarpo-phalangeal (MCP) joints are discernable, as well as cellular condensations that form their future ligaments. Carpalia and proximal phalanges chondrify and interdigital apoptosis is started. At stage 19 (ca. 48 days) the middle phalanges chondrify and interzones are present in the joints of the elbow and the carpalia. The nerves have acquired a definitive pattern. In distal limb the radial artery remains as a capillary plexus. During stage 20 (ca. 51 days) the distal phalanges chondrify and many future ligaments of the hand are discernable as condensations. Digital arteries are present. The distal radial artery acquires its definitive pattern in stage 21 (ca. 52 days). The humerus and the radius start ossification, followed by ossification of the ulna in stage 22 (ca. 54 days). The digits are fully separated at this stage.

At this point, it should be abundantly clear that the formation of either cartilage or bone begins after the myoblasts or precursor myogenic cells have already migrated into the elongating limb buds. Compare this reality with Hamza's wishful statement that, "[Qur'an] **only specifies when the clothing of the limb bones with flesh happens. This ... is straight after.**" He equated "clothing" with the migration of myoblasts which he states happens after the bone formation. This, as suggested by the above un-quotemined statements about the musculoskeletal development, is wrong. The limb buds are already populated with the myogenic precursors and cartilages and bones are formed inside the mesenchymal mass. While the future forearm bones (radius then ulna) start to chondrify on day 41, the myogenic cells, which have already populated the limb bud, have also differentiated into myoblasts, proliferated and grouped or "aggregated" into two precursor muscle masses.

The rising question then is; how does this fit in with Hamza's quotes from Mitchel and Sharma and from Allen and Kramer? His quote from the former refers to the innervations of myoblasts in the proximal part of the limb as stated by Galjaard above and this event occurs by day 37, before any chondrification has taken place. The 2nd part of Hamza's quote about muscle masses corresponds to the start of forearm chondrification which occurs by day 41 as stated by Galjaard. Thus the myogenic cells are already in the various regions of the limb before they start to chondrify.

As for Allen and Kramer, one can point out again that the grouping/aggregation into muscle masses occurs from myogenic cells that are already around the condensed mesenchyme **before** it starts to chondrify. It is also worth repeating that merely the start of chondrification does not yet mean that it is reasonable to say that there are cartilage models of the bones. Both chondrification and the fusing of myoblasts into myotubes which become muscle fibres continue in parallel over an extended period.

Muslim critics may make a flawed allegation that this paper engages in double-standards by criticizing Hamza for his claim that “bone” is the best word for cartilage models when in fact the cartilage is only a precursor to bone, while at the same time, this paper treats myogenic cells as “flesh” even though they are precursors to muscle”. The first point in response would be that cartilage and myogenic cells are precursors in different senses. Unlike bone, which actually **replaces** cartilage, muscle cells are myogenic cells that have differentiated and fused together into muscle fibres. The second point of response is that, unlike Hamza, this paper does not assert any particularly modern meaning to the Qur’an’s “flesh” (lahm). Rather, this discussion aims to demonstrate the incorrect information that has been delivered by Hamza in his amateurish interpretations of scientific statements regarding the movement and aggregation of muscle cells as well as his false claim that cartilage models and bones do not form in parallel with muscles.

On a side note, there is an important distinction to be made between state and process. You could reasonably describe the state of the limbs after a certain point as bones clothed with flesh, which is perfectly obvious since everyone knows that their bones are surrounded by flesh. The Qur’an, however, is not describing a state, but a process by which such a state is achieved, and to say “we made the lump of flesh, bones, then we clothed the bones with flesh” is a poor description of the process by which our bodies arrive at such a state because these two things develop in parallel.

On a separate note, consider that the myoblasts in the developing arms have grouped into distinct muscle masses by day 41 and that ossification of the bones begins around day 54 (see quote from Galjaard above). Should one behave in the same spirit as Hamza does and proclaim that based on these two statements, limb muscles are formed before limb bones i.e. the opposite of what Hamza claims? Such an approach would be unscientific as it involves taking statements out of their proper context and defining keywords conveniently in order to mold them to fit one’s preconceived conclusions. As stated before, muscle and bone development occur in parallel.

(**Note:** See also appendix C for embryologist, Professor PZ Myers’ refutation of Hamza’s misused myoblast quote.)

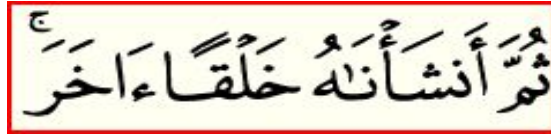
The important point that should not be forgotten is the fact that this heavy technical discussion about embryology was caused by the very pretentious

interpretation that one intellectually dishonest apologist gave to the most mundane phrase one could utter; **“then We clothed the bones with flesh.”**

iii. Summary of Refutation

The phrase under discussion is **“then We clothed the bones with flesh.”** The only “miracle” associated with this phrase is the existence of those who would think such a mundane statement that anyone could say, actually refers to a physiological phenomenon discussed in modern embryology. Nonetheless, the section demonstrated that the reasoning given by Hamza were false. The discussion was built on the previous section, in which it was demonstrated that Hamza’s assertion that the phrase in the Qur'an specifically refers to the limb bones are unjustified. Many issues regarding definitions and specificity were raised. It was also demonstrated that Hamza’s responses to valid criticisms were incompetent and untenable.

8. We Made Him into Other Forms



Transliteration: **Thumma Ansha'anahu Khalqan A'akhara**

Translation: **then We developed him into another creation**

i. Summary of Hamza's Claims

Hamza Tzortzis claims that this phrase corresponds to “modern embryology” as it refers to the stage where the fetus begins to look more human-like.¹⁹⁴

ii. Refutation of Hamza's Claims

In the brief discussion below, the fact that Hamza is using a very unusual and unique translation, which differs markedly from the others that give meanings similar to “then We developed him into another creation”, is ignored.

He states the following;

The terms used in the Qur'an to describe the final process correspond to modern embryology. From the 8th week to the end of pregnancy the period of growth and enlargement occurs, during which the baby begins to form human-specific aesthetic features. This is usually called the fetal stage. The baby's 'shape' develops from indistinguishable to being 'molded' and 'made to look like' the human 'form'. Barry Mitchell and Ram Sharma

Yet, it is rather irksome that Hamza would claim this phrase corresponds to “modern embryology” which incorrectly paints the picture that people in ancient times were unaware of the idea expressed in this phrase. This paints a wrong image.

Putting it bluntly, ancient Arabs would have believed that “semen goes in and baby comes out” i.e. a shapeless fluid, after 9 months, becomes a human baby. It is a mere matter of trivial extrapolation that at some point during pregnancy the fetus would have to begin to look like a human. The sight of miscarriages would only have aided this thought.

Thus, instead of saying this phrase corresponds to “modern embryology”, Hamza should have said that this phrase corresponds to the “common sense” of the people of all times.

iii. Summary of Refutation

The “modern” embryological detail expressed in this phrase is also an “ancient” embryological idea given that it is mundanely intuitive.

II. Muhammad's Plagiarism & Hamza's Bad Arguments

Introduction

The first half of the paper authored by Hamza Tzortzis dealt with “lexically analyzing” the few words in the Qur'an and suggesting that they correspond to various facts discovered recently in the field of embryology. Given that Hamza's lexical analysis has been refuted thoroughly, the rest of his discussion regarding the question of Qur'an's plagiarism is not worthy of any serious examination. Nevertheless, the following discussion will proceed to provide a basic outline of the fallacies and bad argumentation in Hamza's discussion regarding this subject.

The question of plagiarism may not have a straightforward answer as it is conditional on the beliefs of the questioner. The question asks whether Muhammad plagiarized any of the statement he made regarding reproduction. The allegation made is that Muhammad plagiarized from the Hellenic as well as Jewish ideas about human reproduction. In order to have a broader understanding of the issue at hand, it is important to compare the Islamic ideas with that of Greeks and the Jews.

(1) Aristotelian, Galenic and Jewish Views on Human Development

(a) Parallels to the Qur'anic Ideas.

Sura 23:13-14 states the following:

“Then We placed him as **semen** in a **firm lodging**. Then We made the **semen** a **clot of blood**, and We made the **blood clot** a piece of **flesh** and We made the piece of **flesh, bones**, and We **covered the bones with flesh**; then We developed him into another creation. So blessed is Allah , the best of creators.”

These statements convey the same ideas that were summarized by the 2nd century Greek physician named Galen. He states the following in his work, “*On Semen*”, Volume 5, Part 3;¹⁹⁵

first is that in which, as is seen both in abortions and in dissections, the **form of the semen prevails**. At this time Hippocrates too, the all-marvelous, does not yet call the conformation of the animal a fetus; as we heard just now in the case of the semen voided in the sixth day, he still calls it semen. But when it has been **filled with blood**, and heart, brain, and liver are (still) unarticulated and unshaped yet have by now a certain solidity and considerable size, this is the second period; the substance of the fetus has the **form of flesh** and no longer the form of semen. Accordingly you would find

Galen also states the following regarding bones and flesh;¹⁹⁶

to bring all the parts to completion. Thus it caused flesh to grow on and around all the bones, and at the same time, sucking the fattest part out of

It is rather telling that in successive updates to his paper, Hamza continues to omit this quote in his section addressing Galen even though critics have repeatedly pointed to his shameless omission. Moreover, Galen states the following regarding the belief about the nature of the blood that mixes with the semen;¹⁹⁷

is no longer blood but **a clot**. Whatever blood escapes from the vessels into any hollow organ at all in the animal immediately becomes **a clot**. So we shall by this reasoning fashion the animal not from blood but from **a clot**;

While in the proper context of the above passage, Galen is seen to be refuting the idea of the embryo forming from a blood clot, the very mention of the idea could suggest that such a belief either existed or that individuals (especially those limited in knowledge) may come to such a conclusion. The above passages from Galen mention 1) Semen, 2) blood (or maybe even a blood clot), 3) flesh and 4) flesh growing around bones. These parallel all the ideas present in Sura 23:14. Ironically, some of Hamza's reinterpretations also have parallels in texts older than the Qur'an. For example, one of the most popularized reinterpretation is that of "leech/ worm like" embryo. The same description of an aborted fetus can be found in the Jewish Talmud;¹⁹⁸

IF AN ABORTION WAS IN THE SHAPE OF FISHES, LOCUSTS, OR ANY FORBIDDEN ANIMALS OR CREEPING THINGS, IF THERE WAS BLOOD WITH THEM SHE IS UNCLEAN;⁹ OTHERWISE SHE IS CLEAN.¹³

Likewise, Hamza's interpretation that describes the embryo as "**a clinging or sticking thing**" also can be found in Galen's as well as Jewish works predating the Qur'an. For example, Galen's *On Semen* states;¹⁹⁹

"Since the fetus cannot yet either eat or drink, the matter of the mother, that in her veins, is its natural nutriment. It was necessary; therefore, that **the fetus adheres** to the mother, as the seed of the plant must adhere to the earth."

And the Jewish Talmud states the following;²⁰⁰

The following was said by the Rabbis before R. Papa: But are all these answers¹⁴ tenable? Was it not in fact taught, 'When they¹⁵ issue they do so only while clinging to one another'?¹⁶ — R. Papa replied: From this¹⁷ it may be inferred that **the embryo clings** to the sandal at the middle of the latter¹⁸

(b) Parallels to ideas in the Hadith

It is rather interesting that many of the ideas found in the Hadith are also found expressed verbatim in older texts; especially that of the Jewish Talmud. The following are a list of the ideas in the Hadith and its parallels found in texts older than the Qur'an.

b.1) Semen stage lasts 40 days

Sahih Muslim Book 33, Hadith 6395

I listened with these two ears of mine Allahs Messenger (may peace be upon him) as saying: **The semen stays in the womb for forty nights**, then the angel, gives it a shape.²⁰¹

The same idea is expressed in the Jewish Talmud in Tractate Yebamoth 69b,²⁰²

until the fortieth day. For if she is not found pregnant³⁰ she never was pregnant;³¹ and if she is found pregnant,³⁸ the semen, until the fortieth day, is only a mere fluid.³⁹ Said Abaye to him: If so,⁴⁰ read the

b.2) Gender determined after 40 days

Sahih Muslim, Book 33, number 6392

The drop of semen remains in the womb for **forty or fifty (days) or forty nights**, the angel comes and says: My Lord, will he be good or evil? And both these things would be written. Then the angel says: My Lord, **would he be male or female?**²⁰³

The idea of gender determination occurring around the fortieth day once again parallels the Jewish views on Embryology. Tractate Berakoth 60a from the Jewish Talmud states the following;²⁰⁴

been taught: Within the first three days a man should pray that the seed should not putrefy; from the third to **the fortieth day** he should pray that the child should be a male;

The scientific errors associated with this hadith have been discussed in the *Nutfah* section (refer to “*Hadith Regarding Gender Determination*” under refutation point 9).

b.3) Resemblance of the child to its parents

Sahih Bukhari, Book 55, number 546

As for the resemblance of the child to its parents: If a man has sexual intercourse with his wife and gets discharge first, the child will resemble the father, and if the woman gets discharge first, the child will resemble her²⁰⁵

The same idea is found expressed in a different way in the Jewish Talmud, Tractate Nidda 31a:²⁰⁶

R. Isaac citing R. Ammi⁵⁴ stated: If the woman emits her semen first she bears a male child; if the man emits his semen first she bears a female child; for it is said, If a woman emits semen⁵⁵ and bear a man-child.⁵⁶

Other than the fact that Muhammad reversed the roles of each parent, his idea remains unoriginal and erroneous (refer to “*Hadith Regarding Gender Determination*” under refutation point 9).

b.4) “Not from all the sperm a fetus is created...”

Desperate for some kind of reference to sperm (rather than merely semen), some Islamic apologists point to the following hadith;

Sahih Muslim Book 17, Hadith 3627

Abu Sa'id al-Khudri reported that Allah's Messenger (may peace be upon him) was asked about 'azl (coitus interruptus), whereupon he said: **The child does not come from all the liquid** (sermen) and when Allah intends to create anything nothing can prevent it (from coming into existence).²⁰⁷

A similar idea is also found in the Jewish Talmud, Tractate Nidda 31a:²⁰⁸

that man is not fashioned from all the drop but only from its purest part.

The possible Talmudic influence is much less clear in this example as the hadith concerns the practise of al-'azl, or coitus interruptus. In any case, it would have been well known that even a drop of semen could initiate pregnancy or that not all of the semen is necessary for pregnancy due to several ordinary scenarios such as multiple intercourse or failed coitus interruptus (The reader should use his or her imagination to fill in the details).

b.5) Role of Male and Female Semen.

Musnad Ahmad. Hadith 4424.²⁰⁹

claims to be a prophet.” The Jew said to ask Him for something that no one knows except a prophet; he came and sat up and asked, “O Muhammad from what is man created?” The prophet said: “**O Jew, each created from “nutfah” of man and from “nutfah” of woman and regarding “nutfah” of man is a thick “nutfah” and from it, bone and nerve. And “nutfah” of woman is a thin “nutfah” and from it, flesh and blood.**” The Jew stood up and said: “This is how they said it before you.””

This is yet another example of Muhammad repeating the erroneous embryological views of the Jews. The same idea can be found in the Jewish Talmud, Tractate Nidda 31a²¹⁰

mother. His father supplies the semen of the white substance out of which are formed the child's bones, sinews, nails, the brain in his head and the white in his eye; his mother supplies the semen of the red substance out of which is formed his skin, flesh, hair, blood¹⁴ and the black of his eye; and the Holy One,

Interestingly, this belief is rooted in the works of Galen. The following are states in his work, *On Semen*;^{211, 212}

10. But (the fetus) has first of all the vegetative power, which creates not from blood but from the semen itself artery and vein and nerve, bone and membrane – our account explained these things earlier –, having first

and

11. For all the parts that are fleshy in form were generated from blood;

Here, blood refers to the mother's blood, some fine and some thick, which Galen believed is drawn via the uterus and membrane into the combined male and female semen after they have mixed in her womb.²¹³

b.6) "Then why does a child resemble (its mother)?"

Sahih Bukhari, Book 55, number 545

Narrated Abu Salama: Um Salama said, "Um Salaim said, 'O Allah's Apostle! Allah does not refrain from saying the truth! Is it obligatory for a woman to take a bath after she gets **nocturnal discharge** [ahtalam - have wet-dream]?' He said, 'Yes, if she notices the water [maa](i.e. discharge).' Um Salama smiled and said, 'Does a woman get discharge? [ahtalam]' Allah's Apostle said. '**Then why does a child resemble (its mother)?**'²¹⁴

Sahih Muslim Book 3, Hadith 608

The Messenger of Allah (may peace be upon bi m) said: In case a woman sees that, she must take a bath. Umm Sulaim said: I was bashful on account of that and said: Does it happen? Upon this the Apostle of Allah (may peace be upon him) said: Yes, otherwise **how can (a child) resemble her? Man's discharge is thick and white and the discharge of woman is thin and yellow; so whichever prevails has the resemblance.**

²¹⁵

Certain naïve apologists have presented this hadith as a sign of scientific foreknowledge. They claim one should be marveled at Muhammad's mentioning of children resembling their mothers due to their reproductive substances. Ignoring the historical fact that previous cultures had discussed the role of the mother in the child's

resemblance at least a 1000 years before,²¹⁶ Muhammad himself demonstrates that his statement was made from mere observations. One can not begin to fathom the mindlessness of the apologist who advocates supernatural miracles on to ordinary experiences and it is for these reasons that one can assuredly dismiss such unintelligent apologetics.

Nevertheless, for the benefit of those convinced by unintelligent apologetics, the following is stated by Galen;²¹⁷

addition to this, still another argument: If the offspring have the similarities (to parents) through semen, it is necessary that the female also produces semen, because many children are observed to be very similar to their mothers. Let these things be said for the sake of Athenaeus and Aristotle,

On the same page, Galen goes on to criticize other physicians who say that the female spermatid ducts merely “discharge the semen on the outside down below the uterus” (a possible reference to “female ejaculation” from the paraurethral glands), and argues that the female semen is also discharged into the uterus. It is further made clear from other pages that he believes this occurs at a particular moment, namely orgasm, and when it occurs during sleep the semen is subsequently voided externally.²¹⁸

Muslims try to find some excitement in Muhammad’s statement about the fluid “dominating” or “prevailing” over the other which is given as the cause for the child’s resemblance. Islamic apologists reinterpret the statement to claim that it is a reference to modern genetic ideas regarding “dominance”. They ignore the fact that Muhammad’s statement refers to the “fluid” as dominating and there is no indication given to alleles or genes or chromosomes etc. Furthermore, the idea of reproductive fluids dominating can once again be traced back to Hellenic sources. For example, Galen states the following in *On Semen*,²¹⁹

about similarity to parents in the parts of the offspring. If it happens that the similarity arises in accordance with the dominant semen, all the parts will become similar to that one of the parents whose semen dominates; but

It should be obvious that such an idea would be intuitive when one tries to explain resemblance to either parent in the offspring. It is fairly normal for even a lay person, ignorant of genetics to make such statements.

Apart from the unoriginality in the ideas expressed in the Hadith, it also conveys certain errors. The genetic substance of the man is describes as white and thick liquid as is thus referring to semen and not to the solid sperm or the chromosomes etc. More erroneously, the genetic substance of the women is described as a thin yellow liquid and not as solid egg cell etc. Furthermore, the hadith states that resemblance is caused by semen released during the female orgasm and it seems to suggest that Muhammad was unaware of the fact that orgasm has no relevance in

determining the mother's genetic contribution to the embryo. There are many narrations of this hadith in which this imagined female semen is released during the orgasm much as Hippocrates and Galen believed.²²⁰ This once again affirms the fact that Muhammad is merely repeating the inaccurate views on reproduction that was prevalent in ancient times.

The data discussed above indisputably show that views regarding human reproduction present in the Qur'an and Hadith are derivatives as the same ideas are present in much earlier works. In many cases, Muhammad repeated the erroneous ideas found in the Jewish and Greek works. Such a discovery fatally undermines the claims of Islamic apologists regarding the inerrancy of Islamic views on embryology.

(2) Did Muhammad Plagiarize?

As stated earlier the answer to the question of Muhammad's plagiarism is dependent upon what the questioner means and believes. If Muslims are bent on adopting the polemical position that the statements in the Qur'an pertaining to the natural world are original thoughts, then one would be justified in claiming that under such an apologetic view, Muhammad plagiarized earlier works. For elucidation, consider the definition of plagiarism given in *Oxford English Dictionary*,

*The action or practice of taking someone else's work, idea, etc., and passing it off as one's own; literary theft.*²²¹

If Muslims cling to the unnecessary and unjustified position that the ideas represented in the Islamic texts are the original ideas of Muhammad (allegedly Allah by proxy), then it would imply the he is attempting to pass off ideas well known to the Greeks and Jews as his own. Besides, suggesting that Muhammad could only know such mundanely observable and imaginable statements through divine interpretation is a weak unfalsifiable special pleading that should be considered irrational on all counts. This can be explained sufficiently with the use of the following analogy.

Imagine you, the reader, are approached by **a fat man in pink underpants**. He stops you and claims that he has been communicating with God. He then states that he knows that "the sperm fuses with the ovum to produce a zygote" and that he could only know this because God has revealed it to him. You object and state that he could have come to know the information in a book or the internet or heard it from another person or from school and you also point out that in the 21st century this information is common knowledge. The fat man in the pink underpants rejects every objection and insists that the information was his own original ideas that he discovered due to revelation from God.

For all practical purposes, the claims made by the fat man in the pink underpants would be rejected and since he tries to pass off well known ideas as his own (or his alleged God's), it would be appropriate to state that the man is

plagiarizing. Likewise, if apologists claim that Muhammad's ideas are original then it is just as appropriate to accuse him of plagiarism. Furthermore, given the intuitive, observational and derivative nature of the ideas presented in the Islamic texts it is much more reasonable to accept that the ideas were common knowledge among the Arabs. In fact, it would be highly irrational and unrealistic to claim that the Arabs or any other group of humans could not figure out the role of semen or that at some point in the pregnancy blood, flesh and bones would have to form.

However, the apologetic position does not seem to provide a rational approach to examining history. If one did not have to resort to the unnecessary and unjustified apologetic position stated above, then one is free to examine Muhammad's statements in the full light of its context. With such an approach one can come to the conclusion that the statements about reproduction are part of a subset of verses designed for a specific purpose. They fall under the group of verses where Muhammad, in the Qur'an, makes several references to nature. Many examples ranging from cows to camels to rainfall to mountains are mentioned in the Qur'an in order to make the oldest argument for God; **the teleological argument**.

The teleological argument or the design argument states that the apparent design in the natural world proves the existence of God. Such statements can even be found in the Bible such as Psalm 19:1-2;

Psalm 19:1-2 : **“The heavens declare the glory of God; the skies proclaim the work of his hands.”**

Muhammad can be seen attempting to utilize the same method to prove to his audience the existence of God. For example, Sura 14:19 states the following;

Sura 14:19 - **“Do you not see that Allah has created the heavens and the earth with truth?”**

In order to make such an argument, it is very important that the audience **understands** what the verse means. In fact, a much more relevant verse with regards to human reproduction is Sura 22:5 and it states the following;

Sura 22:5- **O People, if you should be in doubt about the Resurrection, then [consider that] indeed,** We created you from dust, then from a sperm-drop, then from a clinging clot, and then from a lump of flesh, formed and unformed - **that We may show you,** And We settle in the wombs whom We will for a specified term, then We bring you out as a child, and then [We develop you] that you may reach your [time of] maturity.

The underlined words provide valuable clues to the historically accurate understanding of the embryological statements under question. The purpose of stating the creation of humans from semen was to demonstrate that it was possible for a God to resurrect a person after his death even when his body had disintegrated. These

verses were in direct response to the skepticism displayed by the Meccan polytheists regarding the concept of resurrection. The skepticism is also documented in the Qur'an in Sura 17:49-51, 44:34-37 and Sura 45:24-26. Sura 44:34-37 states the following;

44:34-37- “Indeed, these [disbelievers] are saying, There is not but our first death, and **we will not be resurrected**. Then bring [back] our forefathers, if you should be truthful.”

This event has also been documented by the reputed exegete Ibn Kathir and he states the following with regards to Sura 22:5,

When Allah speaks of disbelief in the Resurrection, He also mentions **the evidence** of His power and ability to resurrect that is evident **from the way He initiates creation**.²²²

Therefore, the purpose of mentioning the development of humans from semen and the subsequent vague “stages” was to provide “evidence” against the skepticism of the polytheistic Arabs who doubted resurrection. It would thus be unrealistic to believe that Muhammad (or the alleged Allah) provided statements that the Arabs of the time did not know or understand. At the bare minimum, these verses should be conveying ideas that the **Arabs could recognize and reflect upon** (as suggested at the beginning of Sura 22:5). Such a practical output would not be possible if, as apologists assert, these statements convey ideas unknown at the time.

Of course, the apologists are still free to assert the unjustified claim that the statements in the Qur'an nevertheless convey modern embryological ideas whether the Arabs of the time understood them or not. Although this claim ignores the context explained above, it further weakened by the fact that the attempts of the apologists to fit modern scientific ideas into the Qur'an have already been refuted in the first part of this paper.

Thus, in light of information presented, the question of plagiarism can be revisited with an academically unbiased perspective rather than irrational presuppositions of apologists like Hamza. With an honest perspective, one is able to see that Muhammad does not plagiarize from the Greeks or the Jews as he is merely making use of ideas about nature, specifically reproduction, that his audience had to be familiar with i.e. the ideas have to be part of the common knowledge of the time. This conclusion is strengthened by the fact that the early and Classical Muslim scholars understood and explained these verses exactly as the Greeks and Jews understood them. It is further strengthened by the fact that there are no Hadith narrations in which the followers of Muhammad are shown to be uncertain of what these statements mean. Such consistencies overwhelmingly support the view that the ideas presented in these statements were known among the Arabs.

Furthermore, the following hadiths provide another consistent perspective on the above conclusion.

Sahih Muslim Book 8 Hadith 3392 (also repeated in Hadith 3394 and Malik's Muwatta Book 30, Hadith 16)

Judama daughter of Wahb, sister of Ukkasha reported: I went to Allah's Messenger along with some persons and he was saying: I intended to prohibit cohabitation with the suckling women, but I considered the **Romans and Persians**, and saw that they suckle their children and this thing (cohabitation) does not do any harm to them (to the suckling women).

The above hadith narrate an account of Muhammad answering a question regarding reproductive health by appealing to the practices of the Romans and Persians. The existence of such a hadith highlights the fact that Muhammad and the early Muslims were not offended by the thought of Muhammad employing the knowledge of the foreigners. In fact, there are no hadiths or indications in the Qur'an that support the offended apologists view that these statements were suppose to present original ideas

In summary, one is able to observe the fact that all the embryological ideas in the Islamic texts are present in the Greek and Jewish texts. The lack of originality, coupled with a proper contextual examination of the verses, overwhelmingly support the view that the ideas should have been familiar to the Arabs. This conclusion is further reinforced by the fact that the major Islamic scholars of antiquity understood these verses the same way the Greeks and the Jews had understood embryology. Furthermore, the fact that no hadith present a scenario in which the followers of Muhammad express doubt as to what these verses mean also suggests that the ideas were common knowledge. Lastly, there is no evidence in the Islamic texts that suggest any of these ideas have to be original as per the assertions of the crude apologists. On the contrary, the Hadith present a view in which Muhammad was not offended in acknowledging the knowledge of foreigners. Thus in conclusion, an accurate, unbiased and non-apologetic examination of the Islamic statements regarding embryology reveal the fact that Muhammad was not plagiarizing from the Hellenic science but rather he is employing well-known ideas about human reproduction that the polytheistic Arabs had to recognize and reflect upon in order to be convinced of resurrection after death.

(3) Hamza's Bad Arguments

As stated before, the second half of Hamza's lengthy paper is an attempt at establishing the position that Muhammad did not plagiarize from the foreign sources. While the findings in this paper have also arrived at the conclusion that Muhammad did not plagiarize, it is rather ironic that the same conclusion has been reached by two very different lines of reasoning. While this refutation paper endorses the view that

Muhammad did not plagiarize the ideas on human reproduction based on the evidence presented above, it is still worth acknowledging the bad arguments Hamza had to pursue in order to reach the same conclusion.

The skeptical perspective provided in this paper maintains that Muhammad did not plagiarize as he was merely appealing to the common knowledge of his time. On the other hand, the apologetic perspective presented by Hamza maintains that Muhammad did not plagiarize because there is no evidence that he plagiarized embryological views. Additionally, Hamza claims that the information in the Islamic texts is “different” from those in the Greek’s.

As for the former reason, the argument is invalid to begin with due to a simple principle that states “the absence of evidence is not the evidence of absence”. The latter on the other hand is one of the worst examples of reasoning that can only be imagined by the utterly unintelligent or by the devilishly dishonest.

For the purpose of a clearer understanding, a previously mentioned analogy is repeated. Consider again the **fat man in pink underpants** who approached you with the claim that he has been in communication with God. He then states that he knows that “the sperm fuses with the ovum to produce a zygote” and that he could only know this because God has revealed it to him.

You object and state that he could have come to know this information through a book or the internet or heard it from another person or from school and you also point out that in the 21st century this information is common knowledge.

The fat man in the pink underpants rejects every objection and insists that the statement was his own original idea that he discovered due to revelations from God.

At this moment, you do not wish to engage with such a deranged man and prepares to leave by repeating the fact that the fat man in the pink underpants has an ample amount of sources from which he can easily access the piece of trivia he presented.

The fat man in the pink underpants then does something even more irrational. **He demands that you establish exactly how the fat man in pink underpants came to know the information that he claims to have received from God using “specific” and “direct” evidences.**

At this point you start wondering; should I check this man’s house for every book he owns? Should I check his library records to check all the books he has borrowed? Should I check the surveillance tapes to see every textbook he opened? Should I hack into his computer to check every website he has ever visited? Should I start researching on which school or college he went to and then check for every detail he learned? Should I start investigating every person this man has ever talked to? Should I perform all these tasks in order to establish that a 21st century man knew

that “the sperm fuses with the ovum to produce a zygote” due to human sources similar to every other individual on this planet?

Thus the question remaining for you is; are you more likely to engage in an mind numbing investigation into the life of the fat man in the pink underpants **or** are you more likely to realize that you neither have the burden of proof nor the rational obligation to demonstrate how a 21st century man knew a piece of easily accessible information? Quite clearly, if you are able to show that the information is already known and that it was accessible for the person, you have no other obligations to fulfill. You are free to leave the fat man in his pink underpants.

One may wonder, if the above analogy is far fetched. Unfortunately, that is not the case. The world of skeptics are approached by a man named Hamza Tzortzis who demands that others establish exactly how Muhammad came to know about “semen” and “blood clots” and “flesh” and “bones.”

At this point, one is not even clear as to what Muhammad said that could not be based on observations or subsequent extrapolations or prevalent Greek or Jewish ideas. Yet it seems there exists in the minds of many Muslims, some notion of Muhammad stating information that requires detailed study of the Greek sciences.

Why they entertain such ludicrous notions are uncertain given that the statements made by Muhammad are as trivial and vague as possible. One can only remain floundered when Muslims ask how Muhammad knew about “semen” or “blood clot” (which is erroneous) or “flesh and bones” etc. The fact that many think Muhammad, an adult man, could not know about “semen” or refer to the erroneous notion of the formation from “blood clot” or that at some point in time, the embryo would develop “flesh” and “bones” is absurd to the highest degree. Furthermore, what answer are they expecting in response to Muhammad’s statements such as “Human beings remain as semen (“*nutfah*”) for 40 days in the womb” etc

While all the above questions remain unanswered, Hamza marches on with the unfounded notion that Muhammad has stated something that requires the detailed study of Greek knowledge. The following is a closer look at the specific arguments from Hamza Tzortzis;

(a) No evidence that Muhammad plagiarized.

Hamza’s first point is that one needs evidence to claim that Muhammad plagiarized from Greek science. What kind of evidence does he need? He states the following;²²³

In light of the above, practical links establishing a valid connection between the Qur’an and Hellenic embryology must be specific and direct. Non-direct evidence, such as an assumed popularised culture of Hellenic embryology, is not enough to prove borrowing or plagiarism. An inference made from such an assumption is weak unless all other possible explanations have been shown to be wrong or explained as improbable. For example,

He requires “specific” and “direct” evidence for the claim that Muhammad “plagiarized” or “borrowed” much similar to the fat man in the pink underpants who demanded “direct” and “specific” evidence for the reasonable position that he knew an easily accessible information from human sources.

Consider what Hamza and the fat man in the pink underpants are asking for. They both require physical, direct and specific evidence for an event where the finding of any physical evidence is highly unlikely. Assume that the fat man in the pink underpants learned the statement “sperm fuses with the ovum to produce a zygote” from a book, or a website or a television program or in a conversation with others etc. What possible “specific” and “direct” evidence would such an event leave behind? Moreover, why should anyone even begin investigating the books, or websites, or television shows or the people that the fat man in the pink underpants is associated with?

Likewise, assume Muhammad learnt about “semen” from his own experience with “semen” or in a casual conversation with a friend or a family member or a physician or in his travels to Byzantine Syria etc. What possible “specific” and “direct” evidence would such an event leave behind? Moreover, why should anyone even bother investigating these matters?

In fact, it is only reasonable to demand Hamza Tzortzis to establish the necessity of providing “direct” and “specific” evidence for events where 1) it is improbable for such evidences to be left behind and 2) it is unnecessary to have such evidence for forming sensible conclusions. It is highly unlikely that Hamza will be able to justify why anyone should start investigating into the personal life of the fat man in the pink underpants for the purpose of establishing that he knew an easily accessible piece of information.

Apart from the display of irrationality above, Hamza also seems to have a very poor grasp on the subject of logic. For instance, he presents the following argument as representative of the views of the critics;

1. There were some cultural exchanges between Arabs and Greeks
2. The Prophet ﷺ was an Arab
3. Therefore the Prophet ﷺ plagiarised Hellenic views on embryology

In other words, Hamza deliberately concocts an invalid argument and then pushes it into the mouth of the critics. Even a decently brave academic would be sincere enough to present and attack a much more resilient argument from the critics. For instance, consider the following argument;

- 1) If Muhammad had access to the information in the quran, then there is a sufficient reason to reject any supernatural proposals
- 2) Muhammad did have access to the information in the quran.
- 3) Therefore, there is a sufficient reason to reject any supernatural proposals.

The truth of the first premise is self-explanatory. The second premise is also true given that no information exists in the Islamic texts that were not already discussed by the Greeks or the Jews. Muhammad had ample interactions with the Jews in and around Arabia as well as Byzantine Christians in and around Arabia.²²⁴ Muhammad has also acknowledged that he had certain knowledge of the practices of the Romans and Persians.²²⁵ Also consider the historical fact that Arabs had been in contact with the Hellenic cultures for many centuries as explained by the reputed Historian (and iERA's trusted²²⁶) Irfan Shahid;

“The Arabs had eleven centuries or so of cultural relations with Rome on the Tiber and Rome on the Bosphorus and an even longer period of relations with Hellenism whether directly through the Macedonians or through the mediation of Rome.”²²⁷

Additionally, given the observational and derivative nature of the statements uttered by Muhammad and the fact that his contemporaries found no difficulty in comprehending them, one is also justified in asserting that the embryological ideas were part of the common knowledge. This is further supported by the fact that the purpose of the statements regarding embryology was to prove to the skeptical Arabs about the plausibility of resurrection after death. For such a purpose, it is necessary that the Arabs knew what the statements regarding embryology meant. Hence it is clear that Muhammad had many avenues of accessing the information much the same way the fat man in the pink underpants had many ways of accessing his information. Thus, the two premises are true and the argument is valid (uses the form of *Modus Ponens*) and is therefore a sound argument. Refuting Hamza's arguments are in reality almost effortless.

Yet Hamza moves on to convolute the issue with much unnecessary discussion. For instance, the critics of the apologetic embryology claims have pointed out that there was a 7th century Arab physician named Harith ibn Kalada who was trained in the Hellenic sciences at the Persian University of Jundishapur. The historical sources reveal he was associated with Muhammad and thus bin Kalada has been suggested as a source for Muhammad's statements regarding embryology. Hamza responds to this by virtually stating that both Harith bin Kalada and the University of Jundishapur probably did not exist due to limitations in the historical evidence. Then he takes an additional measure by stating that even if they existed, one would have to provide a “direct” and “specific” link between Muhammad and Harith ibn Kalada.

The irony regarding Hamza's attempt to state that the Persian schools of medicine or science may not have existed, lies in a rather unfortunate page of history that may very well be embarrassing for modern Muslims. The tragic account of history is mentioned in the work of the celebrated historian and historiographer, Ibn Khaldun who narrates what the Muslim invaders of Persian did with their well developed sciences;

“There are many sciences. There have been numerous sages among the nations of mankind. The knowledge that has not come down to us is larger than the knowledge that has. **Where are the sciences of the Persians that Umar ordered to be wiped out at the time of the conquest?** Where are the sciences of the Chaldeans, the Syrians, and the Babylonians, and the scholarly products and results that were theirs? The sciences of only one nation, the Greeks, have come down to us, because there were translated through al-Ma'mun's efforts.”²²⁸

“Among the Persians, the intellectual sciences played a large and important role, since the Persian dynasties were powerful and ruled without interruption. The intellectual sciences are said to have come to the Greeks from the Persians, when Alexander killed Darius and gained control of the Achaemenid empire. At that time, he appropriated the books and sciences of the Persians. **However, when the Muslims conquered Persia and came upon an indescribably large number of books and scientific papers,** Sa'd b. Abi Waqqas wrote to Umar b. al-Khattab, asking him for permission to take them and distribute them as booty among the Muslims. On that occasion, Umar, wrote to him: **“Throw them into the water. If what they contain is right guidance, God has given us better guidance. If it is error, God has protected us against it.” Thus the (Muslims) threw them into the water or into the fire, and the sciences of the Persians were lost and did not reach us.**”²²⁹

The situational comedy highlighted by the above quotes from Ibn Khaldun may seem like a scene from a Hollywood movie where in the descendants come knocking on the door demanding evidence that was destroyed by their own ancestors.

As enticing as it is to expose Hamza's dubious research and arguments on this matter as well as related topics, the length of this paper coupled with the insignificance of Hamza's points render it unnecessary to discuss any more of Hamza's bad scholarship. Nevertheless, the point to be noted about Harith ibn Kalada is that he is a relatively unimportant figure from Muhammad's life time and thus it is very unlikely to have much of his life or his beliefs or knowledge recorded in the historical texts. Thus, Hamza demanding one to prove that Harith ibn Kalada definitely existed or that he specifically learned Hellenic embryology or to record Muhammad's specific conversation with him etc is unreasonable to a certain degree. These are as unreasonable as someone demanding for video evidence of Muhammad's existence. Such demands display ignorance of the historical time period and of the kind of physical evidences that should be expected.

Nevertheless, as explained above, the skeptic has no such rational obligation. The skeptic's job is finished when it can be established that the knowledge under question were already known and that the person under question could access the information. The skeptic has no obligation to prove how the information was accessed any more than one has the obligation to prove how the fat man in the pink underpants accessed his information.

(b) Muhammad is too truthful to plagiarize.

Another argument used by Hamza to conclude that Muhammad did not plagiarize is to argue that Muhammad was not a liar and since he was not a liar he would not plagiarize. Hamza even makes the following claim;

the word of God, is inconceivable. There are various reasons for this. For instance he was known even by the enemies to his message as the "Trustworthy".¹³⁸

Whoever made this claim has selective knowledge of the Islamic texts. One needs to go no further than the Qur'an to find instances of Muhammad's enemies (i.e. those who found him to be just another false prophet or soothsayer) accusing him of being a liar. Such verses include the following;

16:101 - And when We change a Verse [of the Quran, i.e. cancel (abrogate) its order] in place of another, and Allah knows the best of what He sends down, they (the disbelievers) say: "**You (O Muhammad SAW) are but a Muftari! (forger, liar).**" Nay, but most of them know not.

Nevertheless, the bigger claim presented is that Muhammad was a truthful person who would never lie and thus would never plagiarize. Of course, the real argument here is that *Islamic sources* state that Muhammad was a truthful person and certainly one would not expect these biased sources to say otherwise (even if he did lie). Thus, as far as a deductive argument goes, the conclusion of "Muhammad never lied" does not follow from the premise that "*Islamic sources* claim Muhammad never lied". Thus, a skeptic is well entitled to reject yet another invalid argument from Hamza.

That being said, Muhammad does not need to be a liar in order to make the statements about resurrection that he made. As explained above, the view that Muhammad was merely drawing on natural examples that the Arabs were **familiar** with in order to explain resurrection to the skeptical polytheists would not be lying or plagiarizing. Similarly, a person in the 21st century who uses statements about the cosmology are neither lying nor plagiarizing. In both cases, the individuals are merely appealing to the common knowledge of the time in order to expound on their lessons.

(c) Muhammad's words do not match the original Greek words

Hamza's final piece of contortion is highly remarkable due to several factors. One factor is that it one of the few original contributions from Hamza in his paper as the vast majority of the claims are taken from the works of other apologists. Another factor for this piece being remarkable is that it is about 10 pages long (or too long). Another factor is just how laughably weak this argument is.

Hamza's argument goes something like the following; he takes the Qur'anic word "*nutfah*" (for example) and then compares it to the Galenic or Greek word

“*spermatos*” (meaning semen) and then states that they are not the same word. He might then suggest that there are better words to convey the meaning of “*spermatos*” (or semen) such as the word “*maniyyin*”. This is then held up as a reason to reject any notion of plagiarism.

Forget the fact that in the academically honest discussion of “*nutfah*” presented in this paper revealed that “*nutfah*” does in fact mean “semen” (or “*spermatos*”) and that all of Hamza’s ambitions were false. Forget also the fact that nobody imagines that Muhammad directly read Galen or other Hellenic or Jewish works but rather critics are talking about indirect and imperfect influence of these ideas – a reasonable notion most eloquently put forth by the historian and arabist, De Lacy O’Leary in the following manner;

“There is a certain analogy between civilization and an infectious disease. Both pass from one community to another by contact”

Hamza’s argument is that because the suspected plagiarist did not use the best word choice to convey the original meanings, one cannot make any accusations of plagiarism. Using Hamza’s logic, an idiot with the poorest diction can never be accused of plagiarism even if he were to copy every original work on this planet. All he has to make sure is that he fails to use the best word choice to convey the original meaning.

Hamza then continues the same fallacious and ridiculous claim with other words in the Qur'an and fills up ten pages with this ludicrous as well as logically invalid argument. How anyone is able to think in such an intellectually bankrupt manner and still be labeled as “the senior researcher” is an embarrassing story for those who assigned him such a position.

III. Conclusion

“Much ado about nothing”

The Shakespearean title is perhaps one of the best descriptions of the long touted “embryology in the Qur'an.” While the *ado* caused by Hamza Tzortzis required over a hundred pages to provide a detailed refutation, the tiring irony is that an explanation for the *actual* embryology in the Qur'an would not require more than a small paragraph.

Consider what an Arab in the 7th century could easily observe; they would observe that the **semen** enters a woman and 9 months later a human infant is born. The newborn undoubtedly consists of **blood**, **flesh** and **bones** which would suggest that had to develop over the course of pregnancy. Add the trivial knowledge that a mother carries her baby in her **womb** to the above observation and one is presented with all the information provided in the Qur'an, in Sura 23:13-14

“Then We placed him as **semen** in a **firm lodging**. Then We made the **semen** a **clot of blood**, and We made the **blood clot** a piece of **flesh** and We made the piece of **flesh**, **bones**, and We covered the **bones** with **flesh**; then We developed him into another creation. So blessed is Allah , the best of creators.”

In light of all the support from the classical and academic dictionaries, the above translation provides the most accurate understanding of the statements in the Qur'an. The inevitable impression shed by the Qur'an is that it is a fatal misnomer to label the above non-information with the undeserved title of “*Embryology in the Quran*.” If anything, the research and findings of this paper would suggest that there is a *lack* of embryology in the Qur'an.

Yet, it is these “uninvolved” and “simplistic” Arabic statements that Hamza Tzortzis attempted to showcase as an example of the Qur'an's eloquent enumeration of information regarding various stages of human development that ranges from fertilization to implantation to neurulation to organogenesis to musculoskeletal development. Tragically for Hamza, over a hundred pages of critical examination of his claims revealed incontrovertibly the academic dishonesty evident in his pompously flaunted “*scientific linguistic analysis*” of the Qur'an. In order to present the Qur'an in the light of scientific meticulousness, Hamza shamelessly resorted to fabrications, mistranslations, misrepresentations, quote-mining, suppression of contrary evidence and fallacious reasoning; all of which have been documented in this full length refutation of his dubious claims. Quite clearly, the reason Hamza had to resort to such deceitful measures is due to the fact that he cannot otherwise retrofit modern discoveries on to Quranic words that carry *nothing* of scientific significance.

In summary, a lengthy, academically honest, analysis of the words in the Qur'an indicates that the book is *nothing* more than the product of a mind that clearly lacked any knowledge of modern science. At the end of the day however, one may be

left wondering without end as to why Hamza Andreas Tzortzis, the senior lecturer and researcher at the Islamic Education and Research Academy, would consistently behave in such a despicably deceitful manner...

"It is difficult to get a man to understand something when his salary depends upon his not understanding it"

- Upton Sinclair

Appendix

A. Hamza quote-mining Hadith in previous versions of his Paper.

The following are extracts from **version 1.1** of Hamza's paper,²³⁰

1. By looking at the Arabic language, it can mean a dribble, a trickle, a drop or semen ³³ . <i>Nutfah</i> can also mean a singular entity which is a part of a bigger group of its kind. Therefore, a <i>nutfah</i> could be a single sperm from a collection of millions of sperms contained in semen, or a single female egg from a group of many other eggs in the Ovaries. ³⁴	2. According to Prophetic tradition, the Prophet Muhammad ﷺ explained the <i>nutfah</i> as a combination of liquids " <i>from a male nutfah and from a female nutfah</i> ". ³⁵
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Hamza's initial point was to make the reader believe in 2 points; 1) "*Nutfah*" means "a singular entity from a bigger group of its kind" and 2) Muhammad's words stating "male *nutfah* and female *nutfah*" prove unequivocally that the Islamic texts refer to "a sperm cell" and an "ovum" before their empirical discovery. The hadith Hamza used was from a collection known as Musnad Ahmed.

Hamza even used these hadiths in his debates as an attempt to establish the scientific accuracy of his holy book. Yet at the end of the day, the hadith was quote-mined. Here is the hadith in its original Arabic followed by its translation,²³¹

4424 حَدَّثَنَا حُسَيْنُ بْنُ الْحَسَنِ حَدَّثَنَا أَبُو كُرَيْبَةَ عَنْ عَطَاءِ بْنِ السَّائِبِ عَنْ الْقَاسِمِ بْنِ عَبْدِ الرَّحْمَنِ عَنْ أَبِيهِ عَنْ عَبْدِ اللَّهِ قَالَ **﴿مَرَّ يَهُودِيٌّ بِرَسُولِ اللَّهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ وَهُوَ يُحَدِّثُ أَصْحَابَهُ فَقَالَتْ قَرِيبٌ يَا يَهُودِيٌّ إِنَّ هَذَا يَزْعُمُ أَنَّهُ نَبِيٌّ فَقَالَ لَأَسْأَلَنَّهُ عَنْ شَيْءٍ لَا يَعْلَمُهُ إِلَّا نَبِيٌّ قَالَ فَجَاءَ حَتَّى جَلَسَ ثُمَّ قَالَ يَا مُحَمَّدُ مِمَّ يُخْلَقُ الْإِنْسَانُ قَالَ يَا يَهُودِيٌّ مِنْ كُلِّ نُطْفَةٍ الرَّجُلِ وَمِنْ نُطْفَةِ الْمَرْأَةِ فَأَمَّا نُطْفَةُ الرَّجُلِ فَنُطْفَةٌ غَلِيظَةٌ مِنْهَا الْعَظْمُ وَالْعَصَبُ وَأَمَّا نُطْفَةُ الْمَرْأَةِ فَنُطْفَةٌ رَقِيْقَةٌ مِنْهَا اللَّحْمُ وَالْدَّمُ فَقَامَ الْيَهُودِيٌّ فَقَالَ هَكَذَا كَانَ يَقُولُ مَنْ قَبْلَكَ﴾**

Translation: "...a Jew passed by the Messenger of Allah 'peace be upon him' while he was talking to his companions. Then, Quraish said, "O Jew This man claims to be a prophet." The Jew said to ask Him for something that no one knows except a prophet; he came and sat up and asked, "O Muhammad from what is man created?" The prophet said: **"O Jew, each created from "*nutfah*" of man and from "*nutfah*" of woman and regarding "*nutfah*" of man is a thick "*nutfah*" and from it, bone and nerve. And "*nutfah*" of woman is a thin "*nutfah*" and from it, flesh and blood."** The Jew stood up and said: "This is how they said it before you.""

Hamza strategically left out everything that was said after, "from "*nutfah*" of man and "*nutfah*" of woman." Thus Hamza avoided presenting his audience with the full context of the hadith which is undeniably incorrect. Even more tragic was the fact

that the same idea was expressed in the Jewish sacred text of the Babylonian Talmud as demonstrated below;²³²

“His father supplies the semen of the white substance out of which are formed the child’s **bones, sinews**, nails, the brain in his head and the white in his eye; his mother supplies the semen of the red substance out of which is formed his skin, **flesh**, hair, **blood** and the black of his eye.”

Despite all the instances of incompetent researching combined with the utter lack of integrity on the part of Hamza, what was even more dishonest was his response to the blatant quote-mining. He emerged with the most pathetic excuse one could use to defend such dishonesty as can be seen in his facebook messages to the above mentioned, Martin Taverville (as Paddy Moore below);



Hamza Andreas Tzortzis This hadith supports the view that the nutfah is from the male and the female, that was the intended use. The rest of the hadith is taking about the fluid of the nutfah and its role in forming parts of the body. My initial thoughts are that this is neither confirmed or unconfirmed scientifically (and is not related to fertilisation so I didn't use the whole hadith). The words forming can mean to have an effect etc, I never claim the nutfah is a sperm, rather I suggest the nutfah is a sperm-drop, as it is an extract of fluid from the semen indicating there is something within that extract necessary for fertilisation. I have seen some atheist apologists assertions that this hadith suggests that nutfah and the semen are the same, but it doesn't! They are clutching at straws. I am writing a response to this. [Ubaid Ur Rehman Khan](#): this was reviewed by a scholar, and it wasn't taken from a popular site :) But you are right, about musnad ahmad in general.

4 hours ago



Paddy Moore [Hamza Andreas Tzortzis](#) I am gobsmacked! You admit you knew what the rest of the hadith said, yet even the version of your paper you just released only has the partial quote. And you suggest the 2nd half is irrelevant in a paper about embryology!

Will you add the rest of the hadith in your paper? You could try to argue it is not disproven by science or whatever, or if you decide to argue the hadith is inauthentic, you should still include it as older versions of your paper have been uploaded and quoted on many websites so you would go some way towards undoing the misinformation.

It's inexcusable to only have that first part.

Here is the Arabic for the hadith:

<http://hadith.al-islam.com/Page.aspx?pageid=192&TOCID=35&BookID=30&PID=4206>

3 hours ago



Hamza Andreas Tzortzis Paddy: The two parts of the hadith address two different realities, one concerning the nature of the nutfah and one concerning its fluid and physiology. I am gob-smacked on how ridiculous your "intellectual" crusade it! :) No offence. If you knew anything about hadith sciences you would appreciate that you can split the matn (text) for a references if it involved two different things. My paper was not on the role of the sperm-drop fluid in the formation or the bones and blood! Lol!

11 minutes ago · Like



Hamza Andreas Tzortzis When my paper evolves in addressing every single contention under the sun, then I will address it as an appendix.

7 minutes ago · Like



Paddy Moore This is incredible. I think anyone can see how "ridiculous" your attempt to maintain your quotemining exercise is. Let's suppose it is talking about nutfah in 2 different realities. Are you seriously trying to say that the 2nd part, which is also very much about nutfah is irrelevant to your paper? That it is intellectually honest to omit it when you use the first part to support your claims about established reality?

3 hours ago



Hamza Andreas Tzortzis Paddy: I do not see your point. This is quite common when referring to hadiths. I think you have the problem here. The second part of the hadith is neither confirmed or unconfirmed in science or established therefore irrelevant to the paper. So in fact, the omission proves my point. However, we addressing all the hadith to, in the next update. It will be an appendix. So you can relax :) Take a chill pill!

3 hours ago



Hamza Andreas Tzortzis Paddy: we have also been open to criticism and updating our work, you know this, the different versions proves this. So I am sensing you just want to attack and judge, which exposes your position. Why did you not just ask " Hey Hamza dude, it looks like you are quite mining, are you going to address the rest of the hadith, and do you have any good reasons for omitting it?" That would be conducive to discussion, but you are as passionately apologetic as the rest of them :) I hope you understand.

3 hours ago



Paddy Moore It's pretty obvious that many people would consider it in conflict with established reality, but more to the point, it undermines your use of this hadith to show that Muhammad knew about the sperm and ovum or that that's what nutfah means. Well, at least you are now going to include it somewhere which is better than nothing (though I wouldn't be surprised if you still just use just the partial quote in the main paper and your lectures).

3 hours ago

Thus Hamza's defense is that he arbitrarily decided that the scientifically inaccurate details about "nutfah" in the Hadith were irrelevant to a discussion about "nutfah". This level of dishonesty does not even deserve a response. He also stated that the information in it are unconfirmed by science which in reality suggests Hamza's lack of knowledge in the field of biology, genetics etc.

As the story went on, Hamza was also approached by his fellow Muslims who stated that the information in hadith is wrong. Finally, Hamza rejected that hadith and stated that it was "weak". From this incident, the Muslim apologetic attitude can be summarized as the following, "If anything Muhammad said correlates with modern scientific information even flimsily, then it is to be accepted and reinterpreted. On the other hand, if anything Muhammad said was irreparably wrong, then it is to be rejected and everyone should automatically believe Muhammad never said such a thing." For such apologists, ignorance is bliss.

B. PZ Myers' exchange with Adnan Rashid

Skyzthelimi7 2011. *PZ Myers & AronRa vs Muslims. Full debate (Part 2)*. <http://www.youtube.com/watch?v=5HDhykqupxo> (refer to timestamp 04:30)

Adnan: Does Aristotle say that **the bones come first and then the muscles**? Does he say that? Are you sure? I will let you think about this?

PZ Myers: Is that what the Qur'an specifically says?

Adnan: Absolutely. This is exactly what the Qur'an says.

PZ Myers: Then we are done here because you have demonstrated the Qur'an is wrong.

Adnan: How? ... This is what the embryologists are telling us ... Let me tell you what Keith Moore said ... on page 364A of his book, *The Human Embryo*, that **in the 7th week the bones are formed and immediately after that, the flesh is formed.**"

PZ Myers: Which is nonsense ... That is wrong because what we have is the differentiation of mesoderm, then within the mesoderm, there is segregation into embryonic mesenchyme then cartilaginous centers that will form bones and these are forming "simultaneously" with each other.

C. PZ Myers' response to Hamza regarding the sequence of the formation of bones and flesh

PZ Myers states,²³³

“Hamza Tzortzis on the Intellectual Dishonesty of Professor Myers SHOCKING!”

That’s what he titles his latest youtube video, anyway. I laughed, just like I laughed when [Eric Hovind called to complain about the misinformation on my website](#). He also claims I “accept defeat”

Myers accepts defeat see below:

<http://www.youtube.com/watch?v=mmqlodiEFsg>

Myers changes his stance from Ireland, In Ireland Myers says the ‘Quran is Wrong’. After reviewing the iERA Research Paper he now believes its the Quran has ‘ very little opportunity for disproof, and they can be made to fit just about any reasonable observation.’

I am surprised to learn that I accepted defeat. Doesn’t he know I’m indomitable? Anyway, here’s the video where Tzortzis crushes me.

I will give him credit — he does link to my [article debunking Islamic embryology](#), which is more than most creationists would do. But still, he’s got it all wrong.

During our [encounter in Ireland](#), I pointed out that their specific claim of a discrete sequence of development in the embryo, from bones to muscles being added to bones, was false. In the article I wrote on Tzortzis’s strained exegesis of two verses from the Quran, I explained that you can’t make concrete claims about embryology from such a vague, cursory, and intentionally poetic source, such as those two verses. These are not incompatible arguments. The second point is not a softening of the views made in the first point.

If anything, *Tzortzis* has backed down. In Ireland, he and his friends were trying desperately to argue that Mohammed knew things that no man in his position could possibly have known without a divine source of information; my argument was that no, what’s in the Quran is very much in line with the knowledge of his day, derived from Aristotle and Galen. No miracles were required to write those two verses.

Now Tzortzis’s claim is greatly reduced; it is that the Quran does not “negate reality”, or does not make claims that contradict known science. That’s fine; as I said, it’s the most minuscule of verses saying the wobbliest things, and it’s derived from observations of embryos made by Greek and Roman predecessors, so it’s not surprising that it can be retrofitted to fit modern science by playing enough word games.

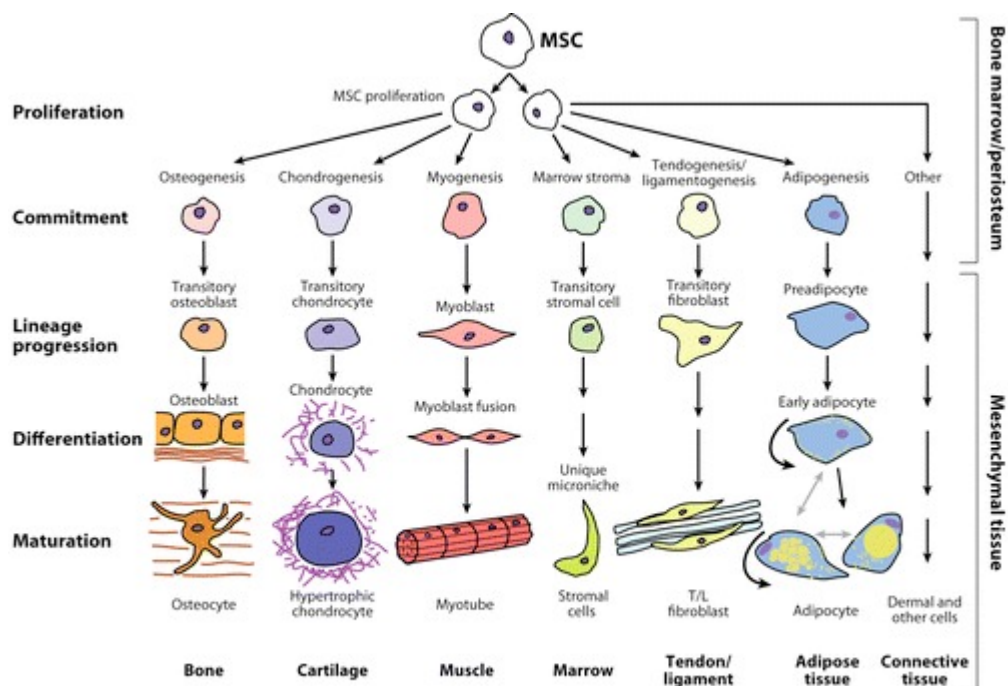
Tzortzis relies on what he calls “lexical analysis”, but it’s little more than compiling the equivalent of thesaurus entries for words in the verses, and then picking and


choosing the ones that fit the point he's trying to make. That's not analysis, it's cherry-picking.

Amusingly, he does the same thing to modern developmental biology. He's gone rifling through legitimate embryology texts, trying to prove that I don't know what I'm talking about, and he found one sentence in a textbook — “after the cartilaginous models of the bone have been established, the myogenic cells, which have now become myoblasts, aggregate to form the muscle masses” — that he thinks shows I was wrong and that his interpretation of the Quran phrase — “bones were clothed with flesh” — is correct.

Wrong. See, this is the problem with his “lexical analysis” approach — it means he tries to conform what he reads to what he already thinks he knows. I know what a developing limb looks like; mesodermal masses condense gradually into organized clusters of cells that differentiate in parallel. Centers of what will become bones aggregate and form cartilage (not bone, notice) as centers of what will become muscle (the myogenic cells in that description) aggregate and begin differentiation into myoblasts and myotubes and eventually muscle fibers.

Here's what we actually see in the developing limb: branching patterns of cell fate decisions by tissue precursors, and parallel differentiation of the cellular components of those tissues.



 Singer NG, Caplan AI. 2011. Annu. Rev. Pathol. Mech. Dis. 6:457–78

The simplistic and discrete idea of “bones, then flesh” doesn't even recognize that “bones” and “flesh” aren't simple binaries, and the sequence isn't a simple temporal

switch. What you had instead was the early segregation of cells into differing mucopolysaccharide matrices, within which cells began complex sequences of shifting patterns of gene expression and differentiation into mesodermally-derived tissues.

Or more poetically, bones and flesh congealed together out of balls of snot. There are sequences within that pattern, but chondrocytes aren't bones and myoblasts are not muscles. Tzortzis is trying too hard to fit the Quran to science, because he can't appreciate that it's just a book written by men trying to make sense of the world, and also unfortunately trying to add extra weight to their opinions by claiming the authority of a god behind them. A sad state of affairs that I'm afraid their modern descendants continue to perpetrate."

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